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THE APPROACH TO A LUMP IN THE BREAST.*

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When a lump in the breast is the presenting symptom, the physician is faced with a decision which may be of great simplicity or of equal difficulty. As the program for lay education in cancer spreads more widely from year to year this presenting symptom is becoming more and more common. The proper handling of a mammary mass may be a determining factor in the prevention of death from cancer. Its improper handling may result either in a missed diagnosis of cancer or in unnecessary mutilation and mental anguish. It is the purpose of this presentation to summarize the background of this presenting symptom and to relate it to the physician's behavior. If what is said proves entirely elementary, the only apology must be that such a summary is often useful in coordinating facts the relationship of which may not always be held in mind.

The primary aim of the approach to a lump in the breast is, of course, diagnosis, and particularly the early diagnosis of cancer. But, before discussing the diagnostic problem, it is important to present briefly certain underlying facts about the commonest causes of tumefaction in the breast. With the exception of conditions associated with lactation, the two commonest causes of lump are, of course, chronic cystic mastitis and carcinoma. Why benign tumors of the breast are not mentioned in this category will become clear shortly. Of the two, chronic cystic mastitis is by all odds the most common and should therefore be first considered.

From our growing knowledge of endocrinology, an understanding of chronic cystic mastitis seems to be approaching. It is now generally accepted that this disease is one of disturbed endocrine function, although the exact nature of the disturbance is not known. There is, of course, a normal rhythm of changes in the breast directly related to the menstrual rhythm. During the progesterone or premenstrual phase of the cycle, the breast undergoes a process known as evolution, consisting of an increase in blood supply, an increase in the epithelial elements and the appearance of wandering cells of the mononuclear series; that is, hyperaemia, hyperplasia and infiltration. Clinically, these changes are associated with a sensation of warmth, heaviness and sensitiveness which may actually reach the point of pain. Shortly after the appearance of the menses, that is in the estrin phase, involution, or the reversal of this process, takes place and the breast returns to the normal resting state. It is now felt probable that chronic cystic mastitis represents a failure of complete involution either throughout the breast or in isolated areas. Why this should occur is not clear. One can say only that it apparently does not depend upon an insufficiency of estrin inasmuch as the therapeutic use of estrin may even increase the symptoms.

The failure of complete involution means the retention in the breast of hyperaemia, of hyperplasia and of infiltration; and to these is added the formation of fibrous tissue, or fibrosis. From these fundamental cellular pathologic changes can be built the multiple and various gross lesions of the disease. If fibrous tissue predominates in a localized area which also contains adenomatous tissue, an adenofibroma will result. In the same way, if hyperplasia of the epithelium predominates, the lesion will be a fibroadenoma. If hyperplasia or fibrosis has closed the opening of a duct, continued proliferation will result in a cyst. If the process of hyperplasia is active, diffuse hyperplastic changes may be seen.

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In other words, one can trace to fundamental cellular pathologic changes the formation of a vast variety of gross lesions, many of them resembling benign tumors. Lipoma, pure fibroma and other tumors which occur elsewhere in the body, occur also in the breast, but there is little evidence that a true benign neoplasm specific to the breast occurs. The lumps of chronic cystic mastitis are probably best considered as not neoplastic.

The simplicity of this conception of chronic cystic mastitis is, of course, obvious. It will be remembered that Bloodgood many years ago attempted an elaborate classification of the disease on the basis of the variations in its gross and microscopic lesions; and others have attempted the same task since. Even before Bloodgood the disease bore different names, Schimmelbusch's and Reclus' disease, for instance, depending upon the character of the changes found. The fundamental fallacy in these attempts has been the failure to recognize the probable common etiology of all the changes. In general, such classifications have fallen of their own weight. The present conception has the advantage of leaving the way open for further knowledge without too definite commitment on the basis of insufficient evidence.

The clinical course of the disease fits in satisfactorily with these ideas. We know, for instance, that changes are almost invariably multiple. Although one cyst may be conspicuous, both breasts will show characteristic changes in less degree. We know, further, that the changes vary in intensity in the same individual from time to time. Lesions may appear and disappear. The disease as a whole may, at least clinically, become inappreciable even after it has once become completely established. An example is furnished by a woman who between the ages of twenty-five and thirty-five years presented the disease in well developed form. There was marked premenstrual pain and tenderness with lumps that persisted throughout the menstrual cycle. At about the age of thirty-five years symptoms disappeared, and, although the breasts did not return entirely to normal, the texture of the gland remained only somewhat irregular rather than diffusely nodular. At her present age of forty no further change has occurred and she is symptom-free. It is believed that during the active phase of the disease she had lesions which under the microscope would have been diagnosed as fibroadenoma or adenofibroma, or possibly even cysts. The lesions of chronic cystic mastitis are, in sum, reversible in a manner not associated with the behavior of true benign neoplasms.

It is probable that most women have these changes in varying degrees at different periods of their lives, just as in the instance cited. It is remarkable that routine palpation of breasts rarely reveals what should be considered the normal; that is, perfectly smooth glandular tissue which, in the larger breasts, often cannot be distinguished from the fat. The occurrence of lumpiness is so common that one might be tempted to consider irregularities as representing the normal. Certainly they do not represent disease in the sense of a condition producing symptoms. It is probable that they do represent disease in the sense of pathological deviations from the normal. In other words, they may be considered the record of episodes of clinical chronic cystic mastitis in the past history of the patient.

As the recognition of early cancer is our primary objective it becomes important to determine as accurately as possible the relationship of chronic cystic mastitis to cancer. This problem, as you know, has been the subject of a large literature. We know that cancer develops in the presence of chronic cystic mastitis. We know, further, that certain of the epithelial hyperplasias of chronic cystic mastitis are distinguished with the greatest difficulty by the pathologist from malignant epithelial hyperplasia. Microscopic pictures can be found which apparently shade from one into the other. This is the background for the opinion of many writers that chronic cystic mastitis is actually a precursor of cancer, a precancerous condition. Knowing that chronic cystic mastitis is a disease of high incidence, it is not surprising that cancer of the breast is frequently associated with it. No etiological relationship need therefore be assumed. On the contrary, the grading of the microscopic changes into each other is less easy to explain without assuming a causal connection between the two conditions. I believe it is impossible to state that cancer does not arise sometimes as the result of the epithelial changes of chronic cystic mastitis, an opinion recently supported by Cheatle and Cutler. This doubt, however, does not present the whole picture as it must be envisaged by the practitioner. In view of the fact that chronic cystic mastitis is a disease of such widespread occurrence and that cancer of the breast is many times rarer, it becomes obvious that chronic cystic mastitis is not practically an important precursor of cancer. The vast majority of

women with chronic cystic mastitis will never develop cancer. The problem is not one of removing all lumps in the breast, or all diseased breasts, in order to prevent cancer. It is rather a problem of detecting a malignant lump in the diffusely lumpy breast.

It is not necessary to review in detail the pathology of the other common cause for the presenting lump, namely, cancer. We should not be primarily interested in the cancer of the breast which presents what is called the textbook picture,—that is, the large lump in the breast of the middle-aged woman, showing skin involvement in the form of reddening, fixation, ulceration or orange peel, accompanied by an axillary mass. This is not the time to diagnose cancer of the breast. We should be intensely interested, however, in earlier pathologic changes which result in the earliest relatively specific sign of breast cancer. When epithelial cells become malignant, there is usually a reaction of the surrounding fibrous tissue which proliferates to form the stroma of the tumor. This stroma is originally a part of the connective tissue of the gland and is therefore attached to the gland capsule and through the gland capsule to the connective tissue beneath the skin. Over the breast there is a considerable development of this connective tissue in the form of strands connecting the gland capsule to the skin. The new-formed tumor stroma behaves just as new-formed fibrous tissue anywhere behaves. As it ages, it contracts. Through the connections already described, its contraction also shortens the attachments between the breast and the skin, and thereby pulls inward upon the latter. This results in the dimpling of the skin over the tumor which is familiar to you all. As will be pointed out later, this phenomenon may be demonstrated by certain maneuvers before actual gross dimpling or retraction is visible. This contraction of the tumor stroma is also, of course, the process which results in retraction of the nipple.

The problem of diagnosis must now concern us. As in most of clinical medicine, the history and the physical examination are by all odds of the greatest importance. To them must be added certain ancillary procedures to be discussed in their turn.

The patient presents herself, saying that she has noticed a lump in the breast of long or short duration. Bloodgood several years ago pointed out a useful diagnostic step which must at this point be immediately instituted. With generally lumpy breasts, it is quite frequent that the patient's attention will be focussed upon one of many lumps while she is quite unaware of others. Inasmuch as a suspicion of cancer in the presence of chronic cystic mastitis definitely arises when one lump differs from the others, it becomes immediately significant if the examiner's attention is first caught by a lump different from that observed by the patient. It is therefore useful, if the patient has not already by a gesture indicated the position of the lump, for the physician to make the request that he be allowed to find it for himself. Over and over again he will become aware of multiple masses among which he decides that one must be the lump of complaint, when actually it is some other. Such an experience is often reassuring.

In association with the complaint of lump there is often a complaint of pain. The character and modalities of this pain must be sought by detailed questioning. It is important to know particularly the relationship of the pain to the menstrual period, as premenstrual discomfort is a common finding in chronic cystic mastitis. It is usually said that cancer of the breast is characterized by painlessness at the outset. As Cheatle has pointed out, this is only relatively true. Certainly the pain of early cancer is inconspicuous as compared with the pain of chronic cystic mastitis. On the other hand, a considerable proportion of malignant lumps in the breast are first detected by the patient not by accidental palpation but because some discomfort has occurred. It may be no more than a sensation of weight, but it is not infrequently a definite though mild sticking type of pain. Knowing the varying susceptibility of patients to pain, we must therefore be somewhat cautious in assuming that all painful lesions are by that fact benign.

The history must also, of course, include the history of the menstrual cycle, including its length, the duration of flow, its regularity and any abnormalities. Above all, the date of the last menstrual period and of the next expected menstrual period must be obtained. In view of the variations in the intensity of chronic cystic mastitis in the course of the menstrual cycle, this need becomes obvious. Included also must be the lactation history and the relationship of a mass to a previous lactation. Not only is the problem of cancer during lactation concerned, but also the possibility that the lump might represent

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a galactocele. The history of breast abscess is important; lumps in the breast may represent the residual scar of infection.

Finally, the nipple history must not be forgotten. The possibility of eczema and of discharge are both important. A clear or opaque non-bloody discharge is of little significance except as a moderately common accompaniment of chronic cystic mastitis. A bloody discharge must always be taken seriously. It means, of course, an ulcerated intraductal lesion. Adair presented figures showing that about half the lesions that cause bleeding are cancer. Below the age of fifty the proportion is slightly less than half and above the age of fifty somewhat more.

It is not essential to detail the physical examination of the breast. Inspection and palpation must be complete and thorough. One or two points only will be made. It is important to include both breasts, both axillae and both supraclavicular spaces. Within the past year two cases have been seen with axillary metastasis in the contralateral axilla, in one of which no mass could be felt in the ipsolateral axilla. It is important to observe closely the skin of the nipple. A very minute change recently seen proved to be Paget's disease. It need hardly be said that palpation of the breast should always be made against the chest wall with the flat of the fingers. The reason for this, of course, is clear. When the breast is felt between the fingers one feels a mass through two layers of skin and subcutaneous tissue; when it is felt against the chest wall only one masking layer must be penetrated. One other point often forgotten is the relationship of massage of tumors to metastasis, as demonstrated many years ago by Murphy in experimental animal malignancies. In tumors vigorously massaged the metastasis rate was distinctly higher than in those not so treated. It is easy to feel a lump too often and too vigorously, especially in teaching practice and in the free clinic. One should attempt to get all information possible at the first examination and to get it with the gentlest touch.

Finally, stress should be laid upon the one important sign of an early cancer which has already been referred to, namely, the demonstration of shortening of the subcutaneous ligaments due to the contraction of the stroma of a malignant tumor. Occasionally this phenomenon is obvious by the retraction of the skin over the tumor on first inspection. If it is not so obvious, every lump in the breast should be subjected to the following maneuver. Light should be directed obliquely across the surface to be examined, so that any irregularity is indicated by a shadow. One or two fingers are placed lateral to the tumor, leaving the overlying surface as little disturbed as possible. The tumor is then shifted beneath the skin. If a shadow develops over it, the possibility of the presence of cancer is immediately increased. In making this observation it is often necessary to repeat the maneuver from many directions around the circumference of the tumor.

In the attempt to aid in the diagnosis of lesions of the breast two additional methods have in recent years received some prominence, namely, transillumination and the X-ray. Transillumination by the aid of a strong light held behind the tumor and close against the skin may demonstrate the translucency of a mass. Such translucency indicates usually that the mass is a cyst containing clear fluid. It does not differentiate between a cyst containing cloudy fluid and a solid tumor, and it gives no aid whaever in differentiating between a solid tumor of benign and one of malignant nature. It is, of course, reassuring if translucency is observed, as that finding is practically diagnostic of a benign blue domed cyst. After some experience with the method, we have not felt that it was a particularly useful aid in diagnosis. There is certainly no objection to its use and many observers employ it routinely.

An X-ray of the breast of soft tissue density will not infrequently demonstrate masses. Some roentgenologists have felt that the diagnosis of cancer can be made from certain specific characteristics of the shadow, particularly an irregularity of outline of the deep portion of the gland capsule. It is probable that by the time this irregularity, indicating invasion of the gland capsule, has occurred, the diagnosis is obvious clinically. On one occasion in our experience an advanced cancer of the breast failed to reveal this sign. In few clinics is X-ray depended upon, therefore, for diagnostic purposes and it is mentioned only to condemn it for inadequacy.

The most recent development in connection with X-ray study of the breast, proposed by Hicken and Best, is the addition of a contrast medium injected into the ducts, sometimes combined with air injection of the solid tissues. I can report no experience with this method except for a single case studied for bleeding of the nipple in which there occurred great discomfort and swelling of the organ. The radiographs shown by Hicken and Best are often striking.

On the other hand, it has been our feeling that possible dangers to the delicate structures of the breast have not been adequately estimated.

The final and determining measure is, of course, biopsy. For the moment let me limit my remarks to the technique of biopsy, reserving for a little later a discussion of the choice of case in which biopsy is indicated. There are two acceptable methods of biopsy, namely, by excision of the mass and by aspiration. I have deliberately excluded biopsy by incision of the tumor as it lies *in situ*. The trauma of cutting into a tumor offers the possibility not only of local implantation, but also of implantation into the veins and lymphatics.

Biopsy by excision can be performed under local or general anesthesia, depending largely upon the temperament of the patient. The disadvantage of local anesthesia resides in the necessity of initiating general anesthesia if cancer is found. It is not hard to imagine the psychic state of a patient who has just undergone the trying experience of an operation under local and who then becomes aware that cancer has been found by the obvious preparations for a radical operation. For that reason it is our custom to employ light nitrous oxide-oxygen anesthesia, unless there is good reason to believe that the biopsy will disprove cancer.

An incision is made over the mass and carried down to the gland substance. If the tumor is near the lower periphery of the breast the incision may be made in the inframammary sulcus. The segment of breast in which the mass lies is excised, keeping well away from the mass itself, so that it is never exposed. Care is taken to handle the mass with gentleness and to use grasping instruments only on the breast tissues surrounding it. The defect left by this removal, even though a complete quadrant of the breast is excised, can usually be satisfactorily repaired by uniting the cut gland edges with a few sutures. The resulting deformity is often inappreciable. As soon as the mass has been excised the operator steps out of the team and cuts open the tissue himself while the first assistant proceeds with hemostatsis and the closure of the wound. In many instances the gross appearance is immediately determinative and the skin wound need only be sealed before proceeding with the radical operation. In such instances, of course, the operator must change his gloves before proceeding. If the gross section is not immediately diagnostic, a frozen section is ordered. It has been our experience that in the majority of instances the frozen section proves difficult of diagnosis if the gross section is not easy. The chief exception to this rule has been the early rapidly growing cancers of high malignancy that have not yet developed a typical stroma.

If the pathologist is uncertain on the frozen section, a question difficult of decision arises. Most surgeons abhor the radical operation for cancer of the breast. The mutilation is extreme and the incidence of functional loss from a swollen arm is too great. A radical operation in a patient who has not cancer of the breast is one of the most unfortunate of surgical occurrences. It is difficult to determine how serious delay for accurate microscopic diagnosis may prove to be for the future of the patient. The undesirability of delay is accepted largely on the classical figures of Halsted, collected many years ago, which showed that a slightly greater percentage of patients who had the immediate operation survived for five years than of those in whom operation was delayed. Whether these figures are valid for today or not is difficult to determine, but in any event the percentage difference is slight. If the biopsy is performed by excision without exposure of the tumor, it is our belief that the chance of spreading the tumor mechanically is not great.

It is probable that the longer the period between once disturbing a cancer mechanically and performing the radical operation, the greater the chance of dissemination. Pathologists now can offer a definitive microscopic diagnosis on an embedded section within as little as five hours, a fact which minimizes this period of delay to twenty-four hours or less. It is our practice, therefore, if the frozen section is equivocal, to request a five-hour section and in the meantime carefully to close the biopsy wound. The radical operation follows on the succeeding day if the five-hour section is positive for cancer.

The problem of the doubtful frozen section has been brought home to us only too recently. A patient on the wards while this paper was in preparation had been subjected to a radical operation on a frozen section which the pathologist considered probable though not certain carcinoma. The final diagnosis was fat necrosis, a condition about which a little will be said later. This patient unfortunately suffered partial necrosis of the flaps, requiring skin-grafting. She was in the hospital over a month with accompanying suffering and expense. She is muti-

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lated unnecessarily. The presentation of this case is a personal confession, the procedure being my responsibility and not the pathologist's. It emphasizes the seriousness of deviation from a principle which I believe to be sound. Fortunately, excision biopsy is usually determinative either from the gross appearance or the frozen section and this type of decision does not often arise.

The other type of biopsy which has achieved considerable popularity recently is aspiration biopsy. There are two general methods by which this is performed. By one method, an ordinary needle of moderate to large calibre is introduced into the tumor and through suction an attempt is made to withdraw fragments for microscopic diagnosis by smear. In the other method, one of various instruments designed to cut a small fragment of tissue through the lumen of a needle is used. Here enough tissue may be obtained to permit the preparation of an embedded and cut microscopic section. Inasmuch as by the first method there are obtained usually only scattering clumps of cells which are observed on the smear in their entirety, a pathologist specially trained for the diagnosis of such material is essential. With the latter method, diagnosis under the usual conditions is possible. Both methods, and particularly the latter, can be criticized from the point of view from which incision biopsy was criticized, namely, the danger of breaking the confines of the tumor and seeding malignant cells in lymphatics or veins. The difference between incision biopsy and aspiration biopsy is entirely quantitative; so much less of the tumor is disturbed and the wound made is so much smaller that numerically the chances of implantation should be greatly decreased. Aspiration biopsy is widely employed at the Memorial Hospital in New York. The suction method is used and final diagnosis for or against malignancy is usually based upon the findings. It is the feeling of the pathologists there that the method has not increased the rate of metastasis. At the University of Virginia Hospital we have employed the second method because of the superior material obtained for diagnosis. Under local anesthesia through a minute incision in the skin, a large bore needle containing an obturator is introduced in the tumor. The obturator is withdrawn and a fine-double-bladed knife fitting the lumen of the needle is introduced. The tips of the two blades are beveled so that when they leave the point of the needle they spread, embracing a slightly larger quantity of tissue than the normal space between the blades. The knife is then rotated, the needle is pushed down over its point and the whole is withdrawn together. Usually a core of tissue 1 mm. to 2 mm. in size is obtained which is embedded and sectioned. The puncture wound of the skin needs no closure. The procedure is usually practically painless. If the tumor has a very dense stroma no tissue may be obtained, as the knife is not strong enough to cut fibrous tissue.

The advantage of aspiration biopsy in our hands has been frequently to save the long anesthetic and double operation that are necessary when excision biopsy is performed preceding the radical. Although at the Memorial Hospital aspiration biopsies are usually considered diagnostic in both a negative and a positive sense, we have not felt justified in accepting a negative biopsy even if tissue is obtained, as we do not feel that the significant portion of the mass is necessarily entered. This is illustrated by a recent case in which a small cancer, obvious on the gross section, lay in the midst of a fibroadenoma which represented the palpable mass. The fibroadenoma was entered with the needle and a section of tissue obtained which showed no cancer. After excision of the mass at the operating table, the track of the needle could be seen as it had approached but not entered the tumor proper. In those instances in which aspiration biopsy is negative, we proceed as though it had not been done. Another advantage of aspiration lies in the diagnosis of the blue domed cyst. The obtaining of clear fluid and the disappearance of the mass are to all intents and purposes diagnostic.

The approach to the diagnosis of a lump in the breast and, particularly, the choice of case in which biopsy of one type or another is indicated must next be discussed. There are three types of case that should offer no real problem. The first is the typical advanced carcinoma, particularly in the older woman presenting the clinical picture already outlined. Diagnosis at this stage is rarely useful, since it represents a diagnosis of impending death. In this instance biopsy is not needed, although if there is any doubt it should be adopted.

The second type of case is the typical chronic cystic mastitis in the breast of the younger woman, presenting marked discomfort before the onset of the menses, multiple similar lumps distributed throughout both breasts, possible discharge from the nipple

and none of the characteristics of carcinoma. Here biopsy is rarely indicated. Occasional observation should be advised with the idea of detecting early any change in size or character of any of the masses. In this type of case the finding of a different lump by the examiner from that complained of by the patient is particularly significant.

The third type is the single lump at any age with no marked evidence of chronic cystic mastitis and with no characteristics of carcinoma. This type is always a cancer suspect. Determination of its nature by biopsy is essential and must never be delayed.

There is another and unfortunately a large group of cases which tax the judgment of the physician. These are the lumpy breasts with one larger or harder lump at the time of first observation. The picture is so common that biopsy might become too frequent if all such lumps were excised. Furthermore, should the disease progress, repeated biopsy in a single patient might become necessary. All the lumps in such a breast cannot be excised and it is always possible that one of the smaller lumps might be malignant while the conspicuous lump is benign. I know of no more difficult problem than this. One of the most helpful measures is the repetition of examination at specific periods of the menstrual cycle, which is a good practice in all cases in which chronic cystic mastitis is diagnosed. The patient should be seen just before the onset of the period, shortly after the onset of the period and in the intermenstrual phase. The findings are often illuminating. A good many years ago, before I learned the value of this routine, I saw a young woman with a conspicuous lump in her breast on which I advised a biopsy. An appointment was made for her admission to the hospital and the night before the planned operation I visited her there for only my second contact with her. On examination I could not find the lump, not because it had disappeared, but because both breasts were filled with large masses of similar character. Fortunately this examination took place just before her menstrual period. The operation was cancelled and later examination in the intermenstrual phase showed that the lump first seen had become smaller and that another lump not previously noted was conspicuous. Through this chance finding the expense and mutilation of a biopsy were avoided.

In this type of case the age of the patient will have considerable bearing although it must not be too absolutely relied upon. After adequate repeated examination, biopsy should be done for any lump which remains constant and is obviously different from other lumps and for any lump which increases in size under observation. Occasionally also biopsy may be indicated for psychic reasons, about which a word or two more will be said. On the whole this is one of the most difficult decisions in surgery and errors will be made. Most of them should be in the relatively harmless direction of an unnecessary biopsy than in the serious direction of failing to diagnose cancer.

There are certain pitfalls of diagnosis of a lump in the breast which must briefly be mentioned, including certain of the rarer conditions. Among the most puzzling of these is multiple carcinoma, fortunately exceedingly uncommon. One of the danger signals of multiple carcinoma is eczema of the nipple, as Paget's disease may be associated with this condition. Very recently a woman in her thirties was operated on for lumps in the breast. She had two rather outstanding lesions in the right breast, one the size of a lima bean and one the size of a pea. Both breasts were filled with shotty nodules of smaller size. The nipple showed a just detectable area of extremely mild eczema. In this instance the nipple and one of the masses were excised for diagnosis. Frozen section on the latter revealed carcinoma and a radical operation immediately followed. The nipple showed the typical lesions of Paget's disease and the second mass was also malignant. At this patient's age and without detection of the change in the nipple, it might have been easy to have made a diagnosis of chronic cystic mastitis and to have advised delay until an inoperable stage had been reached.

A second pitfall may be a large cancer with a long history and with none of the clinical characteristics of the disease. If we follow our rule of making a diagnosis in all distinctive lumps, no mistake should arise here. In the days before the preparation of thyrotoxic patients for thyroidectomy with iodine, a young woman was seen with marked hyperthyroidism and a lump in the breast about four inches in diameter which the patient had first noticed five years previously. During her convalescence from thyroidectomy it was felt that the patient was in sufficiently good condition to permit excision of the breast mass under local anaesthesia but not in good enough condition to permit radical mastectomy. As the mass showed no evidence of skin attachment or other more

advanced changes of carcinoma after five years, the possibility of cancer was hardly considered. When carcinoma was shown, a long delay became necessary before radical mastectomy could follow the excision of the tumor.

A third pitfall which has already been mentioned is the development of cancer in an advanced chronic cystic mastitis with the presence of many lumps of considerable size. There is no golden rule to avoid an error in this group. The patient with such a condition presents a natural handicap to the diagnosis of cancer which it is difficult to overcome.

A fourth occasion for error lies in cancer in the lactating breast. This lesion is, of course, the most malignant of all cancers. Furthermore, it may present marked inflammatory changes which mimic lactation inflammations of the breast. Any physician concerned in postpartum care must be on the alert for the development of a lump which advances progressively and which does not respond promptly to the usual treatments for retention and inflammation.

The differential diagnosis of cancer in the lactating breast is confused by another lesion which may prove a pitfall in cancer diagnosis, namely, the galactocele. This is, of course, a permanent retention cyst developing during lactation and containing inspissated lacteal secretion. It presents as a single lump in what may be otherwise a normal breast and has none of the characteristics of cancer. Its history usually dates to a period of lactation. Such a history should not lead the physician to ignore the possibility of cancer and the general rule of biopsy for a single lump in the breast should govern.

Perhaps the most puzzling but certainly one of the rarer pitfalls in breast diagnosis is fat necrosis. Pathologically, this is a foreign body reaction occurring about fat which has escaped from its cellular envelope and acts as an inert substance in the tissues. The lesion is usually but not always directly referred to trauma. This is not a useful historical point, however, inasmuch as many cancers are also so referred. Unfortunately fat necrosis creates the same reaction in the connective tissue of the breast as does cancer, namely, proliferation and subsequent contraction. Fat necrosis therefore may present the only early distinctive sign that we have of cancer of the breast, namely, attachment to the skin. The only way in which unnecessary radical operations for fat necrosis can be avoided will be by performing biopsy on all but the most obviously advanced cases of cancer. In this connection we believe that the aspiration biopsy is particularly useful. In one instance a mass beneath the nipple, which presented definite attachment to the skin and retraction of the nipple, was subjected to excision biopsy because the aspiration biopsy revealed no cancer. The frozen section also revealed no definite cancer. The biopsy wound was therefore closed and the definitive diagnosis was obtained from the embedded material. The simplicity of the aspiration biopsy permits its use to indicate the necessity of an excision biopsy in any equivocal situation.

Tuberculosis of the breast, fortunately now rare in this country, may also cause skin-retraction. When one considers that enlargement of axillary glands frequently is associated with mammary tuberculosis, the possibility of error is placed in sharp relief. The records of the University of Virginia Hospital contain an instance of the radical operation without preceding biopsy in a case of this sort.

Finally, we must not forget sarcoma of the breast, which may present some of the characteristics of carcinoma. It is important to make a distinction, inasmuch as the therapy of the two diseases is completely different. The radical operation for cancer of the breast is directed entirely toward lymphatic spread. Sarcoma does not spread by the lymphatics and the radical operation is therefore not indicated. All that should be done for this disease is a simple mastectomy, removing that portion of the pectoral muscle that lies in contact with the tumor.

There remains only the question of the fear of cancer. In these days most patients who present themselves with a lump in the breast come with the fear of cancer already in their minds. The most complete understanding of the patient must be obtained in order to approach this emotional reaction with the least possible harm to the patient's psyche. With patients in whom it is judged that no amount of reassurance following simple examination would erase fear, biopsy of what the physician believes is an innocent mass may be indicated, so that he can add the positiveness of a microscopic diagnosis to his well-reasoned opinion. To those patients in whom a diagnosis of chronic cystic mastitis is made on clinical grounds alone, it is well to put all the cards on the table, stressing particularly the practical point that most chronic cystic mastitis is not associated with cancer. One can tell the patient that she has this extremely common disease, which most

women may have at some time in their lives; that, having the disease, she is no more apt to have cancer than if she did not have it; and that her only handicap lies in the fact that cancer might arise and be difficult to detect. This last statement lends weight to the advice to be given that the breasts should be examined at intervals by a physician on the alert for changes. Such intervals may be from three to six months, but rarely longer than the latter. The patient should further be told that at any time a microscopic examination of one of the lumps may become necessary.

Such reassurance to the patient must be based, of course, on real reasons. None of the criteria for biopsy already mentioned can be ignored. One must be certain that reassurance in relation to cancer is not mistakenly given. At least once in my experience have I been guilty of this error. A woman of over sixty years had had one breast removed ten years before for proven cancer and was seen with a small indefinite lump in the other breast. She had recently gone through a severe emotional period associated with illness and death from cancer in the family. Her physician plead with me to reassure her in relation to cancer if I could conscientiously do so, fearing a serious emotional disturbance. In this instance I broke the usual rule of biopsying a single lump. Six months later the cancer was obvious. Fortunately such errors on the part of physicians are rare. A few cases, however, do occur; and in many instances the reassurance is given, not because the patient particularly needs it, as in this instance, but because the physician does not realize the possible significance of the single lump.

In conclusion, the realization of that significance is the essential single element in the physician's approach to a lump in the breast. Unless he can with full assurance to himself be certain that a lump is not cancer, it becomes his sole duty to insist that such a lump be biopsied and its nature determined.

WHAT EVERY PHYSICIAN SHOULD KNOW ABOUT CANCER OF THE CERVIX.*

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Cancer of the cervix uteri causes more than 14,000 deaths in this country each year. This is nearly 20 per cent of all deaths from cancer in women. The best estimates available at present indicate that a cross section of all cases of cancer of the cervix treated in America today will show a five year survival rate of only about *10 per cent.*

This high mortality is not because of the lack of an efficient remedy with which to treat cancer of the cervix, for proper treatment produces five year survivals of about 75 per cent in the early cases, and well over 50 per cent in the moderately advanced cases. Five year survivals of 35 per cent have been obtained by proper treatment even in those patients who are *far advanced,* that is, in those patients with a large ulcer crater, and a "frozen pelvis". It is obvious, therefore, that the number of deaths from cancer of the cervix can be greatly reduced. In fact, these figures indicate that the deaths can be cut to less than one-fourth of the number now dying provided all patients with the disease can receive the proper treatment.

Of still greater importance is the fact that cancer of the cervix is, to a great extent, a preventable disease. To appreciate this, one must remember that cancer of the cervix usually begins in a chronically diseased cervix, and that it begins in just one cell, or in a tiny group of cells. It takes weeks and often months for the growth to become far enough advanced to jeopardize the life of the patient. Therefore, routine semi-annual examinations of our patients will tend to discover many precancerous lesions of the cervix and many cases of actual cancer at a stage when the condition is curable.

All who are interested in reducing the mortality from cancer realize that the successful promotion of this work is largely dependent upon the family physician. If he fails to recognize a cancer in its early and curable stage, or if he mistreats a malignant condition and the patient becomes hopeless, he

*Read before the South Piedmont Medical Society at Danville, Va., November 28, 1939.

must suffer the everlasting abuse of the family for his negligence; for the laity is rapidly learning the truth about cancer and regularly demanding more knowledge of the subject. On the other hand, by establishing a regular routine of periodic examinations among his patients, a physician may greatly increase his own personal income and at the same time save hundreds of lives by causing the removal of pre-cancerous conditions and by the early detection and proper treatment of actual cancer.

A large number of the cases of cancer of the cervix develop after the child-bearing period, and after this time an infected cervix is as useless as is an infected tonsil. There is no good reason, in fact, why a physician should permit cervical lacerations and chronic cervical infections to exist in his patients of any age.

Leukorrhea is so prevalent in women that most of them accept it as a normal condition. This flow is usually due to an infected cervix, and while cancer of the cervix develops in only a relatively small percentage of these cases, it is not unwise to look upon an infected cervix as a pre-cancerous state.

Unfortunately, the signs and symptoms of cancer come on quite insidiously, producing no pain and little or no discomfort to cause those so afflicted to seek the advice of a physician before the process has become advanced. This makes an educational campaign for the laity quite essential.

We should teach women that the first pink stain not connected with normal menstruation is a danger signal, and when one considers how far advanced the average case is when this sign appears, it also becomes evident that it is imperatively necessary to teach them about some earlier manifestation of the disease. This early sign usually manifests itself as a decided change in the character of the vaginal discharge. Cancer will not always be found in these cases, but a good percentage of them will have cancer, and leukorrhea in any form at least signifies an infection and a long-neglected infection may lead to cancer.

Among the more efficient remedies for the treatment of the infections of the cervix, electric coagulation gives the best results. One should be careful, of course, not to produce too much scar tissue when so treating the cervix of young women who may give birth to children.

In considering patients with actual cancer, one must remember that death rarely results from the local multiplication of cancer cells, nor does death usually result from a local invasion of the adjacent tissues. Death almost invariably is the result of metastases to more vital and less accessible parts. When the patient applies to the physician, the examination should therefore be made as gently as possible, for a local malignant lesion may be metastasized by a forceful examination.

Since non-traumatic irradiation, that is X-ray, given in sufficient quantity will so devitalize cancer cells as to prevent their taking on growth, should they become disseminated, it is always wise to give X-ray therapy as the *first act* in dealing with suspected cancer, particularly in old women.

In young women, the prebiopsy irradiation can be given by gently applying a radium pack with practically no filter directly to the cervical tissue to be removed. The treatment should be given one week before the biopsy, for a total of 150 mg. h. This will, we believe, sufficiently devitalize the tissue immediately adjacent to the radium, and it will not sterilize the patient.

The examiner should remove tissue for microscopic study in every suspicious case. He should always remember that numerous cases of cancer of the cervix occur in women under thirty years of age, and that the presence of fibroids in no way indicates that cancer may not also be present. In fact, the two conditions are frequently found in the same patient.

If we are to have even a reasonable chance of curing a patient in whom metastasis has already occurred, we must see that a lethal dose of irradiation reaches every cancer cell in the patient's body. This is absolutely impossible when these patients are treated with radium alone. Therefore, external (roentgen) irradiation is essential if we hope to accomplish more than a temporary relief of symptoms.

Radium is so frequently misused today that the number of cancer of the cervix patients being thus rendered hopelessly incurable is far greater than is the number being cured by radium therapy.

No one can prove that metastasis has not occurred in any given case, and adequate external irradiation will at least tend to prevent further metastasis. It also serves to stop hemorrhage and to clear up infections in the genital tract so that the radium may then be given with greater safety and over a longer period of time. It is, therefore, obvious that roentgen irradiation should be given as the *first act*.

The treatment of cancer of the cervix is generally conceded to be a radiological problem; but more cases are being treated in America today by surgeons than by radiologists. It is, therefore, necessary to make it more widely known that effective irradiation cannot be expected more than a few cm. away from the radium application and that cancer so inadequately irradiated rapidly becomes radio-resistant and thus incurable by any type of treatment thereafter.

At this point, we wish to stress the fact that we are not trying to discredit the good work of our surgical colleagues. Many radiologists untrained in the fundamental principles of oncology are doing as much or more harm by continuing to irradiate patients with various forms of cancer that could be better treated by surgery; but the treatment of cancer of the cervix is certainly a radiological problem. The administration of a series of roentgen treatments prior to the radium therapy is an absolute essential to proper care, and the proper treatment with either roentgen rays or radium requires a broad knowledge of the whole field of radiology.

The prolonged series of roentgen therapy greatly adds to the cost of the treatment. This additional expense complicates our problem tremendously. It is some times necessary to send an indigent patient or one in the low income group with cancer of the cervix to an endowed clinic. In doing so one should first ascertain whether or not the clinic has the proper personnel and equipment necessary for the correct treatment of cancer of the cervix.

The actual treatment must, of course, be left to the individual radiologist. It will suffice here to say that the patient should first receive a full series of heavily filtered high voltage roentgen therapy to the pelvis extended over a period of about five weeks and that this should be followed by highly filtered intra-cavital radium therapy of sufficient dosage, usually about 7,000 mg. h. divided between the vagina and the body of the uterus.

Referring to the treatment of cancer, Ewing[1] makes the following statement: "The time is past when the mere ability to perform the standard surgical operation justifies the surgeon in undertaking the treatment of most forms of cancer. This fact may be emphasized by the report that the average operative mortality for rectal cancer in nineteen American cities of a population of about 100,000 is 45 per cent, while the mortality of many specialists is only 5 to 10 per cent."

In fact, every well informed physician knows that the practice of oncology requires many highly specialized procedures and instrumentations which necessitate an enormous amount of equipment and training, and that the diagnosis and treatment of cancer is therefore one of the most highly specialized fields of medicine. Many physicians, however, fail to recognize cancer as a true and grave emergency in its first states. Neoplasms are, therefore, being treated daily, or we should say mistreated daily, by physicians who are neither trained nor equipped for the work. So long as this situation continues no material reduction in the mortality rate from cancer can be expected.

The problem of accurate diagnosis and of the proper treatment of cancer of the cervix, like all other forms of cancer, is dependent upon the patient getting into the proper hands at an early stage. The oncologist, that is the physician adequately trained in the diagnosis and treatment of neoplasms, can now cure a high percentage of his cases; but the problem of cancer prevention and the problem of directing the patient to the proper place for final diagnosis and treatment must always remain in the hands of the family physician. Upon his judgment rests the life of every patient that comes under his care.

SYNOPSIS

1. Five-year survivals of all cases of cancer of the cervix treated in America today do not exceed 10 per cent, yet five-year survivals of well over 50 per cent may be obtained by the proper use of external irradiation *as the first act* followed by the right kind of intra-cavital irradiation.

2. Women everywhere should be taught to seek medical advice early for all abnormal vaginal discharges, physicians should make frequent and careful examinations of the cervix and patients with cancer of the cervix should be treated *only by oncologists.*

3. Electric coagulation is effective in the treatment of precancerous lesions of the cervix.

4. Non-traumatic irradiation should be given prior to all forceful examinations and biopsies, and prior to the intra-cervical use of radium.

5. Radium is so frequently misused today that the

number of cancer of the cervix patients being thus rendered hopelessly incurable is far greater than the number being cured by radium therapy.

6. Success is dependent upon cancer prevention and upon placing the cancer patient in the proper hands for treatment at an early stage. The responsibility for the accomplishment of these things rests with the family physician.

REFERENCES.

1. Ewing, James: The Doctor and the Cancer Patient, pamphlet, Am. Soc. for the Control of Cancer, 1932.

30 Franklin Street.

CASE REPORT OF A SPLEEN LYING IN THE PELVIS AND TWISTED ON ITS PEDICLE.

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Mrs. L. R., seventy-four years old, is the mother of two children, aged forty-eight and forty-five years. She is a large stout woman apparently in good health. Five weeks prior to my seeing her she had an attack of upper right abdominal pain with tenderness in that region gradually shifting to the lower right abdomen.

The blood count was normal and the temperature was 100. The urine was normal and other findings were without significance.

After a few days rest these symptoms subsided only to be followed by another attack when she left her bed and went about her daily business. X-ray examination was made but the appendix did not fill. Due to certain irregularities in the cecum the roentgenologist thought that carcinoma of the cecum should be considered. She was admitted to the hospital in Oxford, North Carolina, July 18, 1938, a week prior to my seeing her, and was prepared for operation should one be indicated.

Physical Examination: The abdomen was distended, rigid and tender especially in the right lower quadrant. A mass was detected above the pubis and to the right of the median line. Since a catheter eliminated the bladder and a uterine sound a pyometrium, it was decided that we were dealing with an ovarian cyst on a twisted pedicle although I could not feel it from below. If this diagnosis proved incorrect we felt that the only alternative left was an appendiceal abscess well walled off and wrapped in omentum.

Her blood count was as follows: red cells 4,250,000, hemoglobin 81 per cent, leucocytes 7,600, polymorphonuclears 74 per cent, lymphocytes 20 per cent, blood Wassermann and Kahn reaction negative.

Neither this count nor the history of recurrent attacks provoked by getting up seemed to point to the appendix. It seemed to leave a clear field by exclusion for a rather high ovarian cyst on a twisted pedicle. Although we could not touch it from below it seemed to fit better the recurring attacks on standing and moving about. So, with this tentative diagnosis an exploratory section was done under ether anesthesia.

Operation Report: Through a right rectus incision extending up to and a little above the umbilicus, a tumor mass was exposed; it lay in the true pelvis and extended for at least three or four inches above the symphysis. It was surrounded by adhesions to the omentum, intestines, and bladder, all of which were soft and new, and when these were freed, it was seen that the tumor was the spleen twisted on a large and congested and edematous pedicle. I would estimate the turns at one and a half times, and some of the vessels were plainly thrombosed. Since untwisting the pedicle and freezing the spleen might have led to embolism, it was decided to remove it. The pedicle was ligated with number two chromic catgut, and dropped back. Its length, some four inches or more, made this comparatively easy. The stump could be seen to be retracting up to its normal position after this was done. The cecum was carefully examined and revealed no pathology whatever. The appendix though somewhat atrophic was quite normal. The wound was closed without drainage. Chromic catgut was used in the peritoneum, muscle and fascia, and silkworm-gut for the skin. There was no tension about the closure and the wound was quite dry.

During the pre-operative stay in the hospital from the 18th to the 24th of July her pulse ran from seventy to eighty, and her temperature from ninety-

eight in the A. M. to 100 in the P. M. She ate well, her bowels moved daily, and the output of urine was satisfactory. Except for a trace of albumen and an occasional hyaline cast, there was nothing in it out of the usual.

The operation was over about 3:30 P. M., July 24th, having lasted about one hour. She returned to her room with a pulse of 116. By 6 P. M. it was 120 and her temperature by axilla was 104. The character of the pulse was weak and thready but improved with digifolin.

She was given glucose by vein and small amounts of water by mouth. Her pulse ran from eighty to ninety, and her temperature from 100 to 102 by axilla for the next few days. She was nauseated and vomited small amounts of greenish fluid from time to time. Her bowels moved with enemas and she passed a great deal of gas. Her temperature and pulse gradually grew better, being a little above normal. She began taking nourishment and by the end of the week seemed to be making a very satisfactory recovery. The silkworm stitches were removed on the ninth post-operative day. The wound was clean and dry.

Next day, following a vomiting spell, the wound opened with some bleeding. She was taken to the operating room and the wound was re-sutured under light ether anesthesia. There was no pus, no blood clots, and no evidence of peritonitis. The wound had simply failed to heal.

Following this, the patient seemed shocked, her temperature went up to 104 and her pulse to 120. There was frequent involuntary urination. She was restless and the temperature rose until just before her death, August 5th, twelve days after operation, it reached 108 degrees by rectum. She passed no urine in the last twenty-four hours.

Post-operative laboratory findings showed the red cells dropping to 3,660,000 with hemoglobin 76 per cent. The white cells increased to 15,000, with 89 per cent polys. A few nucleated red cells were found. On August 1st, there were 19,700 white cells with 91 per cent polys. The urine which had become dark showed increasing albumin and casts with a few red cells and pus cells. On August 4th, the day before her death, the urine was semisolid on heating and 50 per cent pus was reported.

Pathological report was as follows:

Gross Description: Specimen consists of a spleen in two parts that combined are 12 x 8.8 x 4.7 cm. There is also a portion of blood clot. The outer surface is reddish and grayish in color, and on section, the cut surface shows at one side an irregular firm grayish tumor nodule 3.8 x 2.5 cm. A small fragment of similar tissue is seen at another point, just beneath the capsule. Other than these fragments of apparent tumor, the cut surface is dark reddish in color and soft. Four blocks.

Microscopic Description: Section of the areas that were thought to be tumor on gross examination shows marked necrosis. Around the necrotic areas there is marked hemorrhage.

Diagnosis: Infarction of spleen. From the clinical record and finding it on the right side, one would suppose that it was dislodged from its fossa, and the vessels became occluded by twisting of the pedicle which caused the infarction.

COMMENT

There was nothing in the blood picture in this case to direct attention to the spleen. The rarity of finding it in the pelvis and twisted (about 103 in the entire literature) would hardly bring it to mind as a possibility. The infarction in the spleen itself and the coagulated blood in the huge veins of the strangulated pedicle may have produced substances that were toxic, accounting for the high temperatures following the operation. The ligation of large thin-walled veins so close to the portal vein itself must inevitably turn some clots directly into the blood stream and on into the liver. Unfortunately, no postmortem was performed, but I should be much surprised had it not shown marked liver changes, if not actual infarction, could one have been made.

Dr. Irvin Abell in the *Annals of Surgery*, 1933, collected ninety-five cases from all that were recorded to that date. To these he added two of his own, making ninety-seven. In the same journal for May, 1938, Elma H. Adkins, of Miami, Florida, reports a case of his own, and has collected five other cases from the literature occurring since 1933. This would place the total number at 103 and with the above case 104 in all to date.

1000 West Grace Street.

XUM

RECENT PROGRESS IN THE CONTROL OF SYPHILIS: AN IMPORTANT FACTOR IN THE FUTURE OF PUBLIC HEALTH.*

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and
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FUNDAMENTAL DISCOVERIES

We are living in a period which is noted for rapid progress in the medical field. During the early years of the Twentieth Century, important discoveries in syphilology followed one another with a rapidity which is unparalleled in any other disease. In 1903 Metchnikoff and Roux demonstrated that syphilis was inoculable in apes. In 1905 the long search for the organism of syphilis ended with the discovery of the Spirochaeta pallida by Schaudinn and Hoffmann.

During 1906 and 1907, Wassermann, Neisser and Bruck applied the serum-complement reaction of Bordet and Gengou to the diagnosis of syphilis and developed the Wassermann test which, with subsequent modifications, occupies a key position in the present syphilis control program.

The discovery of arsphenamine by Ehrlich in 1910 completed the information necessary for the scientific diagnosis and treatment of this disease and laid the foundation for the present-day conception of syphilis control through case-finding and treatment.

THE FIRST CONTROL EFFORT IN THE UNITED STATES

In the United States the magnitude of the venereal disease problem was brought forcibly to public attention for the first time during the World War. The results of physical examinations of draftees revealed that six out of every hundred men examined had a venereal infection detectable without the use of routine blood serologic tests. We became determined to do something about this menace to our national defense. In 1918 Congress created the Division of Venereal Diseases in the U. S. Public Health Service and made available Federal funds to aid the states in the control of syphilis and gonorrhea.

This noble effort was short-lived. The work had hardly begun when in 1920 there was a drastic curtailment of Federal funds. All aid to the states for venereal disease work was terminated in 1926. It was not until ten years later that renewed impetus was given to the battle against the venereal diseases. A landmark in medical history was established by the National Conference on Venereal Disease Control Work held in Washington during December, 1936. The press, magazines and even the radio gave enormous publicity to the syphilis control campaign. Social Security funds, made available to the states through the Public Health Service for general public health measures, made it possible for a number of states to expand to some extent their existing facilities for the control of syphilis and gonorrhea. The Venereal Disease Control Act signed by the President on May 24, 1938, authorized Federal grants to the states specifically for venereal disease control work over a period of years, and established the movement to control syphilis and gonorrhea in the United States on a permanent, national basis. Thus it may be considered that the first full year of the public health battle against syphilis occurred in 1938.

CONTROL ACTIVITIES DURING THE PAST TWO YEARS

Let us, therefore, review the past two years' activities in the control of syphilis and consider our needs for the future.

The legislative bodies have been particularly active. A number of states and localities have appropriated additional funds specifically for venereal disease control. In nineteen states, laws have been enacted requiring blood tests prior to issuance of marriage licenses. This screening of our young population will do much to prevent innocent infection. There is considerable evidence in the literature to show the extent to which infection of the marital partner has increased the prevalence of syphilis and gonorrhea. Reports from the health department of one state where the marriage law is in effect indicate

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Virginia Beach, Va., December 12-14, 1939.

Fig. 1.

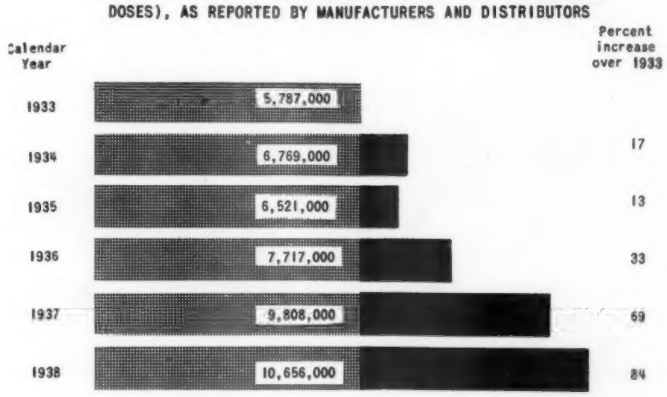
STATES WITH LEGISLATION REQUIRING EITHER OR BOTH A BLOOD TEST FOR SYPHILIS PRIOR TO ISSUANCE OF MARRIAGE LICENSE AND DURING EACH PREGNANCY

that a large number of blood tests are being given to young adults who would otherwise not have had them. New cases of syphilis are found at the rate of 1 per cent of those tested. Most of those who were found to be positive had no previous knowledge of infection. Positive cases were equally divided between men and women. Physicians report that more than half of those with positive tests seek treatment. Non-infectious persons are given certificates and are being married. Physicians and health officers are showing cooperation in following up most of the cases. They report that the law is well received and that they consider it a sound procedure in public health. It is hoped that the Virginia Legislature will make available to its people this preventive measure by adopting the premarital and prenatal bills* which have been prepared jointly by the State Medical Society and the State Department of Health. Addi-

*EDITOR'S NOTE.—This bill was adopted by the General Assembly in recent session.

Fig. 2.

DOMESTIC SALES OF ARSENICAL DRUGS (ESTIMATED IN NUMBER OF DOSES), AS REPORTED BY MANUFACTURERS AND DISTRIBUTORS



Average dose arsphenamine (salvarsan) 0.3 gm; average dose silverarsphenamine, sulpharsphenamine, neosilverarsphenamine, etc. 0.2 gm.; average dose neoarsphenamine 0.5 gm; average dose mapharsen 0.05 gm.

tional funds for carrying out the provisions of such legislation should be provided. Figure 1 shows the many states which recognize the benefits that may be provided to prospective parents by premarital and prenatal examination laws.

So that our future generations may be doubly protected, legislatures of many states have provided routine testing for syphilis during pregnancy. Sixteen state legislatures, including that of North Carolina, have required all treatment sources to examine the blood of women during pregnancy. The states shown with the heavier markings have dual legislation; those with the finer markings require examinations only during pregnancy; while those with the open markings require examinations only prior to the issuance of marriage licenses.

The extent to which certain essential activities are carried on is a measure of progress in the control of syphilis throughout the United States.

There has been a persistent increase since 1933 in the domestic sale of arsenical drugs as reported by manufacturers and distributors. As shown in Figure 2, the five million doses sold in 1933 have increased to ten million in 1938. During 1937 approximately one-third of the nine million doses of arsenical drugs sold in the United States were distributed free through State and local health departments. In contrast during 1938, of the ten million doses sold, approximately *one-half* were distributed by state and local health departments. It is fair to assume that the free distribution of drugs increases the availability of treatment.

Figure 3 shows that during the past year drug distribution by the states of Virginia and North Carolina increased over 100 per cent, while the average increase for the United States at large was but 70 per cent. It is gratifying to know that Virginia and North Carolina have taken steps to distribute anti-syphilitic drugs free to all physicians upon request regardless of the economic status of the patient.

Fig. 3.

INCREASE IN REPORTED NUMBER OF DOSES OF ARSENICALS DISTRIBUTED BY STATE HEALTH DEPARTMENTS 1938 TO 1939

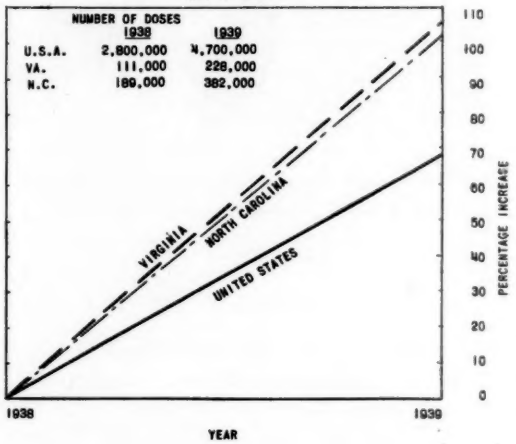
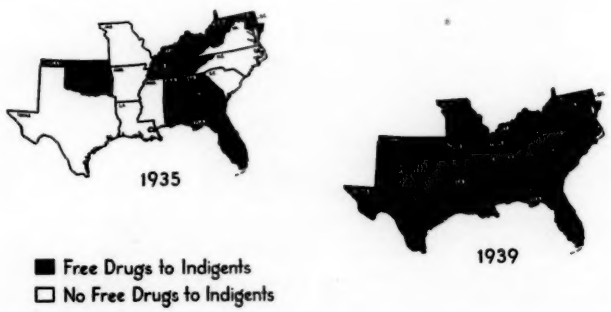


Figure 4 shows that today there is not a southern state which does not furnish free anti-syphilitic drugs for all indigent patients. The free distribution of drugs, which was part of the control program in only eight southern states in 1935, became an integral part of the plan in every southern state by 1939.

Fig. 4.

FREE DISTRIBUTION OF ANTI-SYPHILITIC DRUGS TO INDIGENT CASES BY SOUTHERN STATE HEALTH DEPARTMENTS



The tremendous increase in laboratory activities for the diagnosis and treatment control of syphilis during the ten-year period between 1930 and 1939 is shown in Figure 5. A part of this increase is undoubtedly due to the operation of laws requiring premarital and prenatal blood examinations. Many of these laboratory tests were performed for diagnostic purposes. Unfortunately it has not been possible to determine for the country as a whole what percentage of the total tests were performed for diagnostic purposes and what percentage for treatment control purposes. Since the first objective of the syphilis control program is to discover all possible cases of syphilis, there has been widespread interest in the "Wassermann dragnets". The number of diagnostic tests performed is an interesting indication of case-finding activity. In one large city where figures for a one-year period were available, approximately 85 per cent of the laboratory tests were for diagnostic purposes, with approximately 10 per cent for treatment control, and the remaining 5 per cent for re-check. Of all the individuals tested for diagnostic purposes in this city, 7 per cent were found to be positive. This is admittedly a high percentage of positives, but the most interesting point is that about 60 per cent of the positive cases were brought under treatment as a result of this program.

Fig. 5.

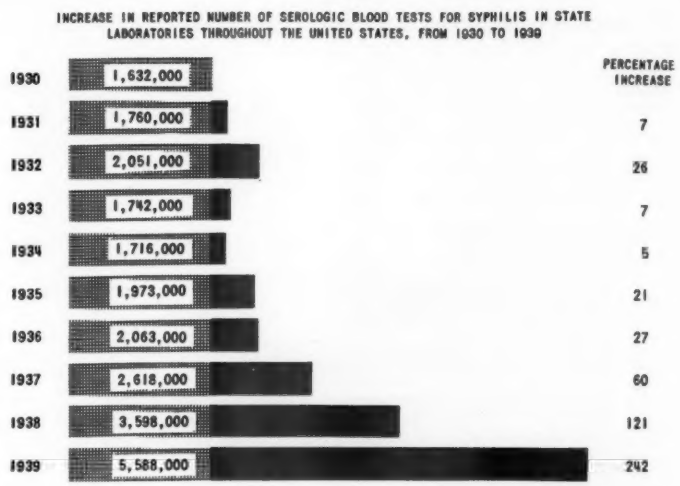


Fig. 6.

INCREASE IN REPORTED NUMBER OF SEROLOGIC BLOOD TESTS FOR SYPHILIS IN STATE LABORATORIES - 1938 TO 1939

	NUMBER OF TESTS IN 1938	PERCENT INCREASE	NUMBER OF TESTS IN 1939
FOR U.S.A.	3,600,000	56	5,600,000
VIRGINIA	71,000	30	92,000
NORTH CAROLINA	271,000	44	389,000

Evidence of laboratory activities in connection with syphilis control in Virginia and North Caroline is presented in Figure 6. According to reports received through state health departments, approximately six million serologic blood tests for syphilis were performed in the United States last year. This number represents an increase of approximately 60 per cent. However, according to reports received from Virginia and North Carolina, the percentage increase in the number of serologic tests performed in these states was below the average increase for the entire country. This lower percentage probably reflects the limitation of efforts in discovering syphilis through routine testing. The operation of special premarital-prenatal legislation undoubtedly will increase the blood testing program during the coming year.

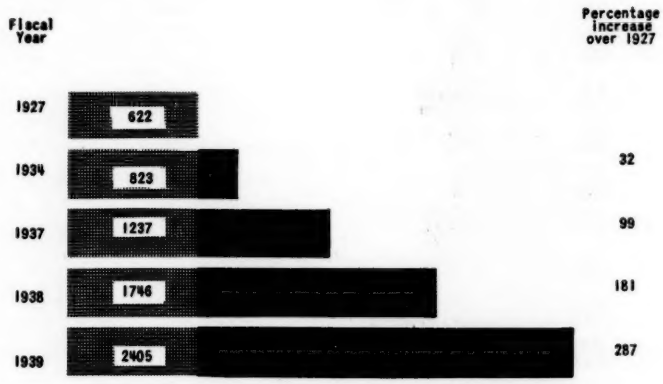
The annual evaluation studies of serologic tests as performed in state laboratories reveal progressive improvement in the character of the work performed. Today, one-fourth of the state laboratories are doing superior work in the performance of these highly

technical procedures. The number of laboratories adhering to standard technics has increased greatly since 1938. Only twelve of the forty-three which failed to follow the authors' rules in 1938 remain in this category in 1939. Of the twenty-two state laboratories still rated below standard, as compared to the high degree of accuracy which has been attained by the control laboratories, eighteen have indicated a willingness to improve their procedures. A number of the states have taken steps to evaluate and improve the character of serologic tests performed in laboratories within their jurisdiction.

Adequacy and availability of clinic facilities are of paramount importance in the syphilis control program. Persistent efforts are being directed toward improving the quality of treatment services. State health departments are surveying the character of clinic performance and are taking steps to remedy defects. Throughout the country generally, case-finding and case-holding activities are being expanded and emphasis is being placed on finding and keeping under treatment cases of early syphilis and syphilis in pregnancy. Much progress has been made in the establishment of additional clinic facilities throughout the United States. Figure 7 shows that in 1927 there were only six hundred clinics in which treatment for the venereal diseases could be obtained; today there are over 2,400 such clinics. During the past year alone the number of clinics treating venereal diseases in the country at large increased by 38 per cent. In Virginia such clinic facilities show an increase of 45 per cent and in North Carolina an

Fig. 7.

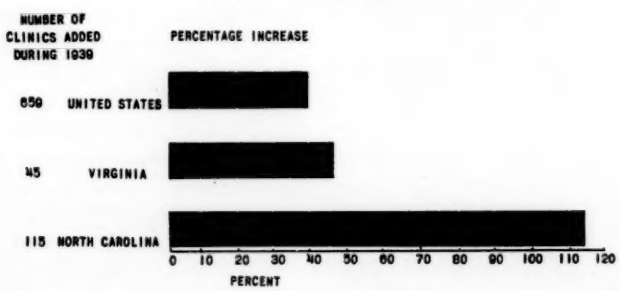
NUMBER OF CLINICS TREATING VENEREAL DISEASES IN THE UNITED STATES



Clinics in 1939 include those in Hawaii, Puerto Rico, and Virgin Islands

Fig. 8.

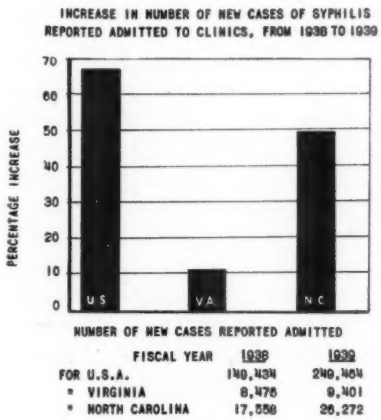
INCREASE IN NUMBER OF CLINICS TREATING VENEREAL DISEASES DURING FISCAL YEAR 1939


NUMBER OF CLINICS ADDED DURING 1939
PERCENTAGE INCREASE
650 UNITED STATES
45 VIRGINIA
115 NORTH CAROLINA
0 10 20 30 40 50 60 70 80 90 100 110 120
PERCENT

increase of 115 per cent. This comparison is illustrated in Figure 8. Despite these increases there is definite evidence to indicate that in both states additional clinic facilities are urgently needed. In North Carolina, according to the annual report of the Health Department, there are approximately twenty-four counties which provide neither clinic facilities nor epidemiological service. In Virginia, the State Health Officer estimates that there is definite need for the establishment of at least fifty additional clinics.

A measure of the accomplishments of syphilis control progress may be obtained from a study of Figure 9 which shows the number of new patients admitted

Fig. 9.



to clinics during the past fiscal year. For the United States as a whole the number of new patients with syphilis reported admitted to clinics increased by 67 per cent. In Virginia the corresponding increase was but 11 per cent; in North Carolina the increase of 50 per cent which was observed fell considerably short of the average increase for the entire country.

This brief sketch of recent activities indicates that the syphilis control program is going forward. The course has been well charted. At the Thirty-Seventh Annual Conference of State and Territorial Health Officers which met in Washington in April, 1939, a decision was made that in order to receive Federal venereal disease control funds after January 1, 1940, state health departments must carry out minimal acceptable practices in connection with laboratory services, treatment and diagnostic facilities, drug distribution and administrative procedures. It is extremely gratifying to know that both Virginia and North Carolina have met all of the minimum standards set forth.

Evaluation of the Program

It is too soon to appraise the effectiveness of our control efforts in the United States. However, we have the assurance that we are on the right road, for similar measures consistently carried out in other countries over a period of years markedly reduced the incidence of syphilis. Fragmentary data available indicate that the ratio of patients with early syphilis to the total number of new patients seeking treatment in clinics is increasing. This is a healthy sign. Furthermore, the high lapse rate among patients with early syphilis is being reduced. Today, not only is the stillbirth rate due to syphilis decreasing, but also greater effort is being made to follow up and examine the children born of mothers with syphilis.

Future Needs

In the last one hundred years the emphasis in public health has passed from the utilization of police powers alone to the application of immunologic procedures and sanitation and finally to the development of control methods through the administration of treatment. In line with this modern concept, the control of syphilis is a major problem.

The needs of the future are apparent—adequate funds, trained personnel, and a determined, united effort to carry on. A study of the future plans submitted by state health departments indicates a full realization of the clear-cut necessity for carrying on measures now in effect and further expansion of syphilis control activities.

Special emphasis must be placed upon increasing the efficiency of the local control programs. Treatment facilities, either in clinics or at the hands of private practitioners, must be increased so as to serve the rural as well as the urban areas. Present diagnostic centers need to be expanded. Physicians who staff the clinics should receive at least nominal remuneration. More effective case-finding and case-holding programs, to serve not only the public clinics but also the private practitioners, need to be established. In the laboratories special emphasis must be placed upon improving procedures and making the services readily available. In the clinics particularly, further efforts are needed to standardize treatment regimes, especially for early and latent syphilis and

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syphilis in pregnancy. Clinic physicians need further training in modern methods of diagnosis and treatment. Of special importance is the problem of record keeping and reporting. It should be emphasized that the reporting program is not an adjunct to but rather an integral part of the entire control program. Without adequate record keeping, planning becomes impossible.

All of these additional facilities will require additional funds. True—but Now is the time to realize that every additional dollar invested in the control of venereal diseases will pay dividends.

An appraisal of control efforts over a two-year period in certain areas of the United States shows that it has been possible to obtain during the second year of the program five dollars' worth of treatment service for every three dollars expended during the first year.

The "venereal disease control power" of each dollar rises as the program gains momentum. Future progress depends in large measure upon our willingness to provide additional dollars!

MOTOR APHASIA, AGRAPHIA AND STAMMERING FOLLOWING THE USE OF SULFANILAMIDE.*

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With the exception of acute hemolytic anemia and granulocytopenia the complications following the use of sulfanilamide are as a rule not distressing. The central nervous system has been particularly immune to its toxic manifestations as only occasionally is there a report of such symptoms as depression, mental confusion or inability to concentrate.

The following case occurred in one who has been known for many years, during which time she had never shown any evidence of nervous or mental instability and was definitely above average intellectually. Her symptoms were so unique that the drug was repeated after a month in order to exclude an unrelated complication.

Case Report: White—Female—Age thirty-four. Was seen in May, 1939, with symptoms and physical signs suggesting a subacute bilateral tubal infection. Her previous history was unimportant and her general physical condition was otherwise satisfactory. Her weight was forty-eight kilograms. Sixty grains of sulfanilamide was ordered to be taken daily. On the morning of the third day she noticed difficulty in articulation. Although she had a mental image of the word there was an inability to pronounce it. In addition there was a spasmodic hesitation in her effort to speak. She continued the medication and returned to the office on the fourth day. By this time the symptoms were more exaggerated and were augmented by stammering. There was a similar impairment of her ability to write. She had a visual word picture but was unable to transpose it to writing without repeated efforts. Coincidental with these irregularities she complained of rather marked depression and emotionalism. The drug was discontinued with a complete relief of symptoms in three days.

Four weeks later an effort was again made to institute sulfanilamide therapy with the same results. The manifestations began on the third day of treatment when the blood concentration of sulfanilamide was .7 mgs. per 100 c.c. of blood. Her blood examination showed rbc 4,400,000—wbc. 10,600—hgb. 74 per cent (Sahli). A few days after stopping the sulfanilamide her symptoms disappeared without any residue of her nervous reaction.

On account of persistent pelvic discomfort this patient was admitted to the Memorial Hospital for an exploratory laparotomy. Following a hysterectomy a urinary tract infection developed. The attending physician, unaware of her previous experiences with sulfanilamide, repeated this treatment. By the end of the third or fourth day rather marked depression manifested itself which was followed by the same difficulty in talking and writing as described in an earlier paragraph.

Thus, in three instances in the same patient this peculiar neurologic reaction to moderate doses of sulfanilamide developed.

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OCULAR FINDINGS IN THE NEWBORN—A PRELIMINARY STUDY.*

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During the past number of years I have been interested in children's ophthalmology, though until now I had never spent any special time studying the eyes of the newborn infant. Recently, however, I have run across several cases having obscure eye defects and, in attempting to assign a cause, I found that others had speculated about the same problem.

What I may have to say is the result of a very limited experience, but a fair amount of reading. I hope to continue a survey of all the babies born on the dispensary service of the Columbia Hospital in Washington, and some time later summarize my findings. It will be interesting to note any parallelism or divergence from previously published surveys of a similar nature. Tonight, I shall quote very largely from surveys, and attempt to summarize their conclusions as best I can.

While most surveys have limited themselves to injuries or infections, I have attempted to include both. I feel that such matters should be of considerable interest to the general medical man, the pediatrist, the obstetrician, and the ophthalmologist. If it can be shown that ocular infections and ocular injuries occur at birth, effort should be made to know more about them, so that we may reduce them to a minium, or treat them adequately when they do occur.

I was much interested in a statement in a paper delivered by invitation by Mr. Comyns Berkeley[1] before the Ophthalmological Society of the United Kingdom. This eminent obstetrician said, "It is asserted that if the eyes of newborn babies were thoroughly examined, instead of injuries to the eyes as the result of labor being, as some of us think, rare, and others extremely rare, they are, in reality, quite common. If this statement is true, or anything like true, then its realization is of the greatest importance to the community at large, since we are at once face to face with this question: How many of the disabilities of the eyes which are commonly called congenital, are due to injury in the process of labor? Which question leads us to another, and that the more important: If these disabilities had been recognized at the time of birth, instead of much later, could a defect, which is now irremediable, have been cured?" If we should expand this statement to include infections, the same comment and questions might well be put at the present time.

I would like, first, to discuss ocular injuries which occur at the time of birth. I believe that it is somewhat better recognized now that such injuries do occur in a fairly large percentage of all births, whether these be normal or abnormal. We are all willing to grant, however, that the major portion of such injuries would seem to be relatively minor ones from which the fortunate infant recovers without any presumed damage or residuum.

Let us consider the forces at work during the birth of a baby. Needless to say, those doing obstetrics are much more familiar with the subject than I, and I shall only try to point out a few factors, which would seem to have to do with the causation of birth injuries. During the process of delivery, the infant's head, being semi-elastic, is frequently badly moulded and misshapen with the bones of the skull overlapping, hematomata of the soft parts occurring, and indentations of the bones being obvious at times. If the pelvis has been particularly narrow, the size of the baby very large, the length of labor very prolonged, or the interference with instruments necessary, the chances for damage to this new arrival into the world have greatly increased.

What are the ocular injuries which have been found in the literature and which we inconstantly see? The question itself would intimate that the greater part of these injuries are rather rare. There have been several cases reported of dislocation or complete avulsion of the eye ball. Hoffman[2] cites two such cases born of the same mother, and after her death at the time of a third delivery, it was found that there was a very sharp angle at the junction of the last lumbar vertebra with the sacrum. This sharp projection had performed a crude enucleation on each of the two infants. The classical example of such an injury is the tale often told, and, I believe, described in the literature by de Wecker,[3] of the eye partially dislocated because it was mistaken for the fetal anus during vaginal examination. Friedenwald[4] reports a case in which there was avulsion of the

*Read before the Norfolk County Medical Society, at Norfolk, Va., November 6, 1939.

eye ball during birth with good result following replacement.

Then there are the lesser, though rather obvious, injuries to the lids, in which the lids have been torn, or badly edematous and contused, or, due to an injury to the levator muscle or the nerve supplying it, a ptosis is present. At times, also, an exophthalmos is seen and it is felt that in most of these cases, there is an intraorbital hemorrhage forcing the eye forward, either caused by, or associated with, a fracture of the orbital wall. Again, ocular pareses occur. These may take place in any one of a number of ways. There may be an intracranial hemorrhage which damages the nuclei to the nerves in question; there may be intraorbital hemorrhage with damage to the muscles or to the nerves; and there may be fracture of the orbital wall with actual dislocation or direct injury to any of the muscles. This question was discussed at some length by Thompson[5] in 1926, and by Edgerton[6] in a very excellent review of the literature in 1934. In connection with such injuries to the extraocular muscles, the very interesting question arises as to whether many of the cases of strabismus or so-called congenital anomalies of the extraocular muscles which are found later in life, may not well be the residuum from birth injuries.

The subject of injuries to the cornea has received quite a lot of attention and a number of cases have been reported in the literature in the last twenty years or more. Lloyd,[7] in a recent article, reported six cases of linear opacities in the cornea with rupture of Descemet's membrane, all found in individuals past infancy but undoubtedly occurring during birth. Haab, Thompson and Ballantyne, Peter, de Wecker, Collins, Bedell, Greene, and many others, have reported such cases. I have, in the last two years, seen two cases rather closely resembling the description given by these men. The vision is usually poor. On gross examination the cornea may look fairly normal. On more careful examination with the magnifying lens or with the slit-lamp, it is found that there are from one to several dense lines in the stroma of the cornea, usually in a vertical direction, and very frequently there are vertical lines of rupture of Descemet's membrane, with the membrane itself often rolled into refractile cylinders. I think there can be little question, at the present time, that the majority of these injuries to the cornea would seem to arise from improperly applied forceps.

So-called congenital cataracts have been seen by several investigators and it is their opinion that injury through blunt force to the lens may occasionally cause lens changes grossly resembling certain forms of congenital cataract. Nystagmus has been found in a fairly large percentage of carefully examined newborns. Stern and Schwartz,[8] in 1924, reporting a series of 100 infants investigated, felt that most of these cases of nystagmus were due to intracranial hemorrhage. The condition was found in fourteen out of forty-four normally delivered infants, and in forty-five of fifty-six delivered from abnormal presentation.

Except for a host of infrequently seen injuries, this brings us down to a type of injury not seen unless looked for, and yet more frequently encountered than all the above injuries together. I speak of retinal hemorrhage in the newborn. Juler,[9] in 1926, found retinal hemorrhages in 9 per cent of newborn infants when examined within the first eight days of life. However, hemorrhages were found in 15 per cent of fifty-eight infants examined within the first twenty-four hours. Richman,[10] in a recently published study of 531 newborn, found retinal hemorrhages in 12.2 per cent of the group. She emphasized the oft-repeated fact that the most frequent are the superficial, flame-shaped hemorrhages which absorb very readily and may not be present several days after birth. Edgerton,[6] in reviewing his findings in a series of 458 cases studied, found retinal hemorrhages in 41 per cent of the total series. A brief glance at the literature will show that various investigators have found percentages of retinal hemorrhages varying from 3 to 46 per cent, the average being 22.7 per cent of all cases reported by twenty-three investigators.

Jacobs,[11] in 1928, while considering the possible relationship between intraocular and intracranial hemorrhages, pointed out that 22 per cent of all newborn infants coming to autopsy had intracranial hemorrhages. These were the average findings of nine investigators. In his own series of fourteen examined at autopsy, 28 per cent had intracranial hemorrhages, and 86 per cent had intraocular hemorrhages. It should be borne in mind, however, that many of his series were prematures. Zentmayer,[12] in discussing Jacobs' findings, suggested that the excess of intraocular over intracranial hemorrhages may be due to the poorer support received by the blood vessels from the surrounding tissues in the eye. Edgerton,[6] however, suggests that the correlation be-

tween intracranial and retinal hemorrhages may be even more exact than we now believe. He suggests, by inference, that many newborn infants may have petechial hemorrhages throughout the brain, or large hemorrhages in silent areas of the brain, and have no very evident damage from them. He points out that cerebral and retinal hemorrhages can not be considered separately since there is a marked similarity between the vascular conditions which exist in the eye and in the cerebral ventricles.

I believe, then, we may assume, for purposes of discussion, that retinal hemorrhages occur in from 15 to 40 per cent of all newborns; that intracranial hemorrhage can be proven to occur at least one-fourth as often as retinal hemorrhage; and that intracranial hemorrhage probably occurs much more frequently than can be proven. With these assumptions in mind, would it not be wise to try to establish the causes, and mode of causation, of intracranial and retinal hemorrhage. This was admirably set forth by Juler[9] in a symposium before the Ophthalmological Society of the United Kingdom, and again more recently by Edgerton.[6]

Undoubtedly a prolonged second stage of labor with considerable compression of the head, with congestion of the vessels and cerebral sinuses, is a chief factor. The damage might be done in one of two ways. By compressing the head, thus compressing the cavernous sinus, causing back pressure on the central retinal vein, many small retinal venules would be ruptured and hemorrhage. Again, pressure on the head causes increased intracranial pressure, which causes an increased pressure in the fibrous sheathing of the optic nerve, thus compressing the nerve itself and the central vein flowing through it. Add to the major factor of compression of the fetal head, the secondary one of fetal asphyxia, caused by pressure on, or twisting of, the umbilical cord, premature separation of the placenta, diseased placenta, prolonged dry labor, and compression of the chest, and it is small wonder that retinal hemorrhage and presumably intracranial hemorrhage so often occur.

There are other factors possibly influencing the tendency to hemorrhage: Syphilis, about which there is some question; mechanical injury to vessels from instrumentation, hemorrhagic disease of the newborn; jaundice; hemophilia; the use of pituitrin; deficiency in maternal calcium and vitamin B; and a host of others. Prematurity definitely lends itself to excessive hemorrhage. The ante-partum health of the mother and infant do not seem to be important.

Rather contrary to the above statement, Eades,[13] and Juler,[9] feel that prolonged labor, asphyxia, pressure on the head by forceps or contracted pelvis, and early rupture of the membranes, do not influence the tendency to retinal hemorrhage. However, Edgerton,[6] in his more recent article and study of a large series of cases, felt that, though the above statements were true in general, the use of mid or high forceps greatly increases the incidence of retinal hemorrhages. Of the seventeen cases so examined by him after the use of high or mid forceps, all seventeen had severe bilateral retinal hemorrhages.

I do not wish to take more time to discuss retinal and intracranial hemorrhages except to speculate with Buchanan[14] and Thompson[5] upon the possible after-results there might be from these hemorrhages or other birth trauma. Buchanan says, "It is, then, very probable that a certain number of children are born every year, and survive infancy, having gross intracranial lesions, and it is interesting and instructive for us to consider what symptoms might be present in after-life which would be more or less direct consequences of the hemorrhage."

Let us leave out the idiots, the spastics, and the paralytics about whom there is little question. We might well question, though, the youngster born blind, found to have an optic atrophy in early infancy. We might well question the serious visual defective, having a vision of 20/200 or less, often with a nystagmus. We might further question the case of the less serious visual defective, the child with an amblyopia for which there is no obvious cause. Since retinal hemorrhages were first found in newborn eyes, the question has been asked, "Might not this child have had a hemorrhage in his macula at birth and no visible evidence be present now?" In partial answer to this question, I note that Jacobs[11] examined twenty-three cases three to six years after having found retinal hemorrhages at birth, and the vision was found normal in all except one, who had had a large hemorrhage near the macula. Rowland,[15] in following up seventeen cases having had retinal hemorrhages, found no evidence of residual damage.

We might further question certain types of strabismus, ptosis, and scarred corneas, and ask ourselves whether birth trauma might not be at fault.

What, then, is the answer? Having examined the newborn and found certain damage, what can be

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done? Usually very little. Local treatment to the minor traumas, and general treatment to the infant, exhaust our possibilities along the line of therapy. Then, cannot we prevent some of these cases? Possibly so. When you consider that retinal and intracranial hemorrhages occur in apparently healthy infants, born spontaneously and without undue difficulty, the problem becomes discouraging. However, we can be unusually careful in learning of possible disproportion between the size of the fetal head and the maternal pelvis. We can redouble our precautions when using forceps. We can attempt to anticipate trouble in the patient who had an injured baby before.

An interesting sidelight to this discussion is that Juler[16] reported having examined the fundi of nineteen infants by Caesarean section and found no hemorrhages. Berkeley[1] rather humorously stated (I quote from the discussion), that "I do not know whether those present are of the opinion that the proper method of delivering children is by Caesarean section, but my juniors have already sufficient indications for that operation." So much for ocular injuries.

Now, for a few minutes, let us consider the ocular infections to be found in the newborn. Within the past few years, a number of able investigators have turned up facts of interest.

What are the infections to be found in the eyes of newborn infants? In the interest of simplicity, they might be divided into gonorrheal (the so-called ophthalmia neonatorum), the inclusion body (so-called inclusion blennorrhea), and a miscellaneous group seen less frequently, caused by the pneumococcus, Koch-Weeks bacillus, staphylococcus, streptococcus, Morax-Axenfeld bacillus, and others. Members of this latter group are to be expected occasionally, since some of these bacteria are normally found about the human body. The diagnosis rests on the laboratory findings and clinical picture. The treatment is cleansing, antiseptics, and general supportive measures for the infant.

Let us turn our attention now to the first two members of the group of infections—ophthalmia neonatorum, and inclusion blennorrhea. As far back as the early part of this century, investigators were pointing to the fact that in many cases of presumed gonorrheal conjunctivitis in the newborn, gram-negative diplococci could not be demonstrated from the secretion or conjunctival scrapings. Then Stargardt found grouped particles in epithelial cells from the conjunctiva closely resembling "inclusions", already discovered by Halberstadter and Prowazek in trachoma. These "inclusions" were first thought to be either a product of the gonococcus, or an atypical form of the gonococcus. However, during the past quarter of a century, numerous investigators have established certain facts.

Inclusion blenorrhea is due to an ultra-microscopic virus or agent, derived from the genital tract of the mother, and infecting the basal epithelial cells of the conjunctiva of the newborn infant. This agent can pass through Berkefeld filters, is capable of infecting the conjunctiva of monkeys in the laboratory, and is completely resistant to silver therapy. It is seen in conjunction, at times, with the gonococcus, but, more often, no significant organism can be found on smear or culture. Most laboratories will report a pseudodiphtheritic bacillus, or the xerosis bacillus, from a case of inclusion blennorrhea. Neither is the primary infecting agent, and usually neither is pathogenic in the conjunctival sac.

The clinical course of this disease is interesting. There is an incubation period of from four to fourteen days, averaging six to eight days. Then there is an acute stage in most cases, lasting from one to three weeks, followed by a prolonged chronic stage, lasting as long as two years, as in a case reported by Thygeson. The acute stage is characterized by a sudden onset of severe inflammation of the conjunctiva, especially of the lower lid, at times with a pseudomembrane, and with marked swelling of the lids, with a profuse muco-purulent discharge. The inflammation is usually bilateral, and gradually subsides irrespective of treatment, leaving no residual damage. Practically every type of antiseptic and therapeutic agent has been tried without apparently influencing the course of the disease until, as has happened with many disease entities, sulfanilamide was tried.

Julianelle and Lange,[17] in a recent series of articles, have discussed the subject of inclusion blennorrhea thoroughly. Thygeson,[18] in reporting an adult and an infant, both treated with sulfanilamide, emphasizes the dramatic cure resulting from this drug. He states that in nine adults and forty-two infants seen by him, no case has healed in less than three months, and the average time was six months when treated with the usual antiseptics. However, in the two cases reported by him at this time, treated with

sulfanilamide, the adult was inclusion-body free in three days, and completely healed in thirteen days. The infant was inclusion-body free in three days, and healed and normal in two weeks. This result was obtained by giving up to one-half grain per pound of body weight, and no local treatment whatsoever was used on the eye.

During the past three years I have seen some ten or twelve cases of inclusion blennorrhea in the clinic, and three cases in private practice. These cases have been equally resistant to treatment, until the last two, which have been treated with sulfanilamide.

Ophthalmia neonatorum, on the other hand, is no new problem. For years, through greater care and treatment of the mother, the instillation of silver nitrate in the baby's eyes, and earlier and more adequate treatment of the disease when it occurs, the incidence of the condition has become greatly reduced. We all recall the facts that the infection is directly transmitted from the birth canal of the mother, that the incubation period is usually three days or less, that the inflammation is usually intense, corneal ulceration not infrequent, the course of the disease usually lasting weeks, and nursing attention must be constant and scrupulous.

But even in this long-known and well-understood disease condition, other facts arise. Sulfanilamide has again come to the fore, and in cases of ophthalmia neonatorum has effected cures as dramatic as in any field in which it has been tried. Along with others, I have used sulfanilamide subcutaneously and by mouth in a number of newborns, and had the pleasure of seeing the acute stage of the conjunctivitis clear up in from twenty-four to seventy-two hours, and the smears be consistently negative after one to two weeks. I have not used sulfanilamide locally to drop in the eyes, but note that Glover,[19] in two recently reported cases, used prontosil to drop in the eyes, combined with prontylin in the milk, with excellent results. I feel that it is entirely possible that sulfanilamide used locally as drops in the eyes, without other medication, might be quite effective.

In the differential diagnosis of inclusion blennorrhea and ophthalmia neonatorum due to the gonococcus, several facts should be remembered. Both occur during birth and usually the infecting agent can be recovered from the mother. The incubation period of gonorrhea is usually less than four days, while inclusion blennorrhea seldom appears before the fourth day of life. The acute stage is usually more severe in gonorrhea, and corneal ulceration with subsequent visual damage, does occur. Whereas, in inclusion blennorrhea, no damage has yet been reported. In gonorrhea the acute stage is prolonged, while in inclusion blennorrhea the chronic stage seems almost interminable. The diagnosis can finally be established by finding the gram-negative diplococci in gonorrhea, and the so-called inclusion bodies in inclusion blennorrhea. It should be emphasized that in searching for inclusion bodies, epithelial scrapings deep enough to obtain basal cells should be made, smeared, stained with Giemsa or Wright's stain, and searched for thoroughly from one-half to one hour before the inclusions can be assumed not to be present.

Instillations of silver nitrate in the eyes of the infant at birth will usually destroy the gonococcus, but has no effect whatsoever on the infecting agent in inclusion blenorrhea.

I have wondered whether some of our cases of so-called non-specific purulent conjunctivitis in the newborn, or conjunctivitis due to "old silver nitrate" reported in the past, might not have been unrecognized cases of inclusion blennorrhea.

Of course, in reporting eye findings in the newborn, developmental and hereditary anomalies should not be overlooked. However, they do not lend themselves to discussion except by one well-versed in embryology. I will make no effort to comment on the subject.

I hope I have not detained you too long. My desire has been to call your attention again to certain injuries of the eyes occurring during birth, speculate about their possible end-results, and caution about their prevention. I have called to mind the two most common ocular infections in the newborn, attempted to differentiate them, and in discussing their treatment, have once more sung the praises of sulfanilamide.

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SEVERE DIABETES MELLITUS: EMPHASIS ON INSULIN THERAPY IN COMA, INFECTIONS, AND PREPARATION FOR OPERATION.

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From a clinical standpoint, diabetes may be arbitrarily divided into three groups: namely, mild, that is, cases which can be controlled by diet alone; moderate, that is, cases which require diet regulation plus insulin not to exceed thirty units every twenty-four hours; and, severe, that is, cases which, in addition to diet regulation, require insulin in excess of thirty units every twenty-four hours. It should not be forgotten, however, that changes from time to time may take place in the carbohydrate tolerance of the same individual; consequently, a patient may be in one group today, and in another group at some future time.

Regardless, however, of the degree of severity of diabetes, the primary aim of treatment is to restore the patient's metabolic processes to normal and to keep these processes normal. While our knowledge of treatment is too crude for perfect results, it may be said that when normal nutrition is maintained, when the urine is kept free of sugar, when neither hypoglycemia nor ketosis develops and when, because of its possible relationship to arteriosclerosis, the blood cholesterol is kept within normal limits, the primary aim of treatment has been attained. Other metabolic studies, such as respiratory quotient, blood fat level and the basal metabolic rate, are of no practical importance.

After the diet prescription has been formulated, the next problem is to supply insulin in such quantities and at such times that its action will more or less parallel the absorption of that portion of carbohydrate which is in excess of the amount that body tissue can normally utilize. At present three types of insulin are available, their chief difference being the duration of their action (which, in turn, is related to rapidity of absorption), and the character of the symptoms which develop when hypoglycemia is precipitated. The maximum effect of regular insulin following hypodermic injection takes place in one and a half to two hours, and its effect is of short duration—from six to eight hours. When given intravenously, it acts still more quickly and its duration of action is still shorter. The action of protamine zinc insulin is more prolonged—twenty-four hours, and to a slight degree as long as seventy-two hours with its maximum effect taking place from seven to fourteen hours following the injection. The effect of crystalline insulin is intermediate between the two. Regular insulin, because of the relatively short duration of its action, will, when given fifteen to twenty minutes before a meal, parallel the carbohydrate absorption for that particular meal. Since its duration of action is only six to eight hours, it will, if given before breakfast, affect only the amount of sugar excreted following the morning and noon meals. If the diabetes is mild, sufficient endogenous insulin may be produced to keep the patient sugar free until the following morning. If, however, the disease is more severe, one or more additional doses may be necessary to keep the patient in balance. To control patients with marked loss of carbohydrate tolerance, regular insulin preceding each meal supplemented by a dose at bedtime may be required. Generally speaking, blood sugar determinations are not a necessary routine practice when regular insulin is used to treat uncomplicated diabetes. At present the use of regular insulin has more or less become restricted to treating complications

and to those cases that are considered "protamine failures". This has come about because when protamine zinc insulin is used, fewer hypodermic injections are necessary, the number of units required every twenty-four hours is on the average 20 per cent or less, and, lastly, one dose often stabilizes the blood sugar better than three doses of regular insulin. While these advantages of protamine zinc insulin over regular insulin are important, its disadvantages should not be overlooked. They are: first and most important, asymptomatic hypoglycemia leading up to disastrous results may develop following the administration of protamine zinc insulin; second, protamine zinc insulin doses cannot be adjusted to changes in the daily activities of the patient as readily as regular insulin; third, a longer time is required to bring diabetes under control; and, fourth, because of its slow action, it is inferior to regular insulin in the treatment of complications.

The difference between the clinical picture of hypoglycemic reactions produced by regular insulin and protamine zinc insulin is important. When protamine zinc insulin is used, it is not unusual to see a fasting blood sugar of twenty-five in which the patient has no complaint. Headache, nervousness and disorientation together with unconsciousness are the chief findings if changes take place. On the other hand, in hypoglycemia precipitated by regular insulin, symptoms are apt to come on rapidly, with apprehension, hunger, sweating, unconsciousness, convulsions and other neurological disturbances. In children diplopia is common. Cases of permanent central nervous system damage resulting in hemiplegia have been reported. Glucose is specific for either type of reaction, but the results are far more dramatic in those cases precipitated by regular insulin than in those precipitated by protamine zinc insulin. Furthermore, hypoglycemia in the latter is likely to be undertreated. Because of the peculiarity of the clinical picture of hypoglycemia produced by protamine zinc insulin, periodic fasting blood sugar determinations are imperative to detect moderate lowering of the blood sugar in order that serious reactions may be averted.

If the action of insulin and carbohydrate absorption must more or less parallel one another if the patient is kept in balance, how can this be brought about? If protamine zinc insulin is used, one dose will in 80 per cent of patients be sufficient. Unfortunately, in the beginning of treatment, the exact amount of insulin necessary to control the patient cannot be accurately determined by any known clinical or laboratory means. Reliance then has to be placed on what has been termed an "educated guess" which has to be followed by the trial and error method until satisfactory results are obtained. This single dose is usually given before breakfast, and the diet is so distributed that 25 per cent of the total calories is given at breakfast, 25 per cent at lunch, 35 per cent at dinner and 15 per cent at bedtime. Following the initial attempt at adjustment, a sample of the urine from all specimens of urine collected between breakfast and lunch, lunch and dinner, dinner and bedtime, bedtime and breakfast, should be examined. Following this attempt at adjustment no further shift in treatment should be made for seventy-two hours unless some emergency develops. From information learned by the examination of these specimens, appropriate changes can be made in the distribution of food intake or the insulin dosage. When changes are made, it is better that only the diet or insulin be changed at each adjustment for the obvious reason that when both are changed simultaneously, the factor which brings about the change in the patient's condition will not be known. In about 20 per cent of uncomplicated diabetes, in order to control the patient, it will be necessary to supplement protamine zinc insulin with one dose of regular insulin or one dose of crystalline insulin, or rarely one dose of each. Under such circumstances one precaution should be noted, that is, never mix different types of insulin and inject from the same syringe. When using protamine zinc insulin another point must be borne in mind, that is, the patient may have severe hypoglycemia in the morning and sugar in all urine specimens collected during the day, the so-called protamine paradox. This condition is said to be brought about by an over-shooting hyperglycemia corrective mechanism. At any rate, strange as it may seem, such patients may be frequently brought into balance by reducing, not increasing, the dosage of protamine zinc insulin. A large per cent of "protamine failures" are thought to be due to the fact that this peculiarity is not taken into account. Repeated injection of insulin at the same location causes fat absorption. For this reason, regardless of the type used, the same site of injection should not be utilized more often than every two weeks. Regular insulin may be given either subcutaneously, intramuscularly or intravenously. Protamine zinc insulin

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is usually given subcutaneously; it is not used intravenously. In changing from regular insulin to protamine zinc insulin, the diet is distributed 25 per cent, 25 per cent, 35 per cent and 15 per cent for breakfast, lunch, dinner and bedtime respectively; and on the same morning 75 per cent to 80 per cent of the total dose of regular insulin is given in the form of protamine zinc insulin together with the customary dose of regular insulin. Fifteen to twenty minutes before lunch the patient should receive half the customary dose of regular insulin. Before dinner and at bedtime no regular insulin is given. On the second day, half the customary amount of regular insulin is given before breakfast together with the same number of units of protamine zinc insulin as was given previously. After this no other insulin for the day is given. On the third day, only protamine zinc insulin is given. (Same dose as given on previous days.) Fractional urine specimens are collected and appropriate changes are then made to fit the individual case.

KETOSIS

Ketosis is due to incomplete fat oxidation. Like carbohydrate tolerance, this, too, varies in severity. There may be no symptoms, the only finding being a trace of acetone in the urine, or there may be profound coma, or all gradations between these extremes. From the standpoint of prognosis (Owens and Rockwern), the degree of central nervous system involvement is paramount, all other factors being of little significance. The degree of coma does not necessarily parallel the lowering of the CO_2 combining power of the blood plasma. I have seen patients totally unconscious with a CO_2 of 25 volumes per cent, and patients retain all their mental faculties with a CO_2 of 10 volumes per cent. The mortality in patients who are adequately treated before partial unconsciousness develops is negligible. What is more important is that the patient's chance of recovery declines as coma deepens. Because of this danger to the patient, it becomes all important to recognize acidosis in the pre-coma stage, and, once it is recognized, to treat it vigorously. In the treatment of pre-coma cases, the only principles involved are to bring about the oxidation of sufficient glucose to take care of fat metabolism, to combat dehydration and to prevent hypoglycemia. Five thousand cc. or more of fluid daily may be required to combat the dehydration. From 50 to 100 units of regular insulin, depending on the height of the blood sugar, should be given as the initial dose. Thereafter, regular insulin should be given every thirty minutes, or less often in mild cases, to oxidize the excess glucose present, the amount given depending on the per cent of sugar in the urine; if the reaction is red, twenty units; orange, fifteen units; yellow, ten units; yellow-green, five units. If the regular dose of protamine zinc insulin has been given for the day, then the dose of regular insulin may be less. Glucose is a necessity if the blood sugar goes below normal. In pre-coma cases the diet is chiefly made up of carbohydrate, and in such cases may be given by mouth every one to three hours as the condition warrants. After the acidosis subsides, the patient should be placed on four feedings, 25 per cent, 25 per cent, 35 per cent and 15 per cent, and insulin changes should be made according to the method previously described. If the patient is in true coma, the patient should be hospitalized, and the same principles applied. Subcutaneous fluid in the form of normal saline should be given, together with the application of heat if the body temperature is subnormal. Urine specimens are collected through an indwelling catheter. The course of the blood sugar and CO_2 should also be followed by laboratory studies. An attempt should be made to control peripheral circulatory collapse if such a situation develops. Drugs are of no particular value in the treatment of this condition. Transfusion of whole blood is thought to be of benefit. There is some evidence to show that the giving of glucose is dangerous if the blood sugar is extremely high; however, as far as I am aware, no series of cases regarding this point has been studied in which the degree of unconsciousness was given proper consideration. For this reason, I am doubtful if it can be proved that glucose does the average coma case harm. Certainly, patients recover from diabetic coma with a blood sugar higher than that found at the time of the initial determination. As consciousness follows coma, the patient is treated as a pre-coma case. Following the control of the acidosis, the conventional changes are made as the case progresses, remembering that for several days and sometimes for several months carbohydrate tolerance improves as the time following coma becomes longer.

ACUTE INFECTIONS

All acute infections cause insulin to become less effective. Consequently, more frequent observations

are required when infections develop. As in precoma cases, the urine should be collected more often, each specimen examined, and the per cent of sugar present in the urine should act as the guide as to the amount of insulin required. The total caloric intake as well as the proportion of carbohydrate, fat and protein, together with other necessary food elements, must be given even more consideration than that given the uncomplicated case, particularly if the infection is of a chronic nature. Recourse to intravenous feeding should be made only in the event that patient cannot take food by mouth.

PREPARATION FOR OPERATION

When possible, it is best that patients have at least three days preparation. If fever is high, give six equal feedings; if patient has moderate fever or is afebrile, give four equal feedings. Divide regular insulin into equal amounts before each meal. On the day of operation, provided the operation is not on the gastro-intestinal tract, give the usual breakfast in liquid form and the regular dose of regular insulin. Immediately before operation, which should be done four to six hours after breakfast, give 250 cc. of 10 per cent glucose in saline intravenously. Immediately after operation give the same amount of regular insulin as was previously given before each feeding. Four hours after operation give 1,000 cc. of 5 per cent glucose in saline preceded by the usual or a larger dose of regular insulin. Thereafter this is repeated every six hours, the insulin being decreased or increased as conditions warrant. As convalescence proceeds, the patient is given meals at six hour intervals, after which the regular routine as followed before operation is put into effect. Following emergency surgery, the same post-operative treatment should be applied.

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ENDOCRINE DISORDERS IN CHILDHOOD.*

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It is a privilege and a pleasure to address the Pediatric Section of the Medical Society of Virginia on the subject of endocrine disorders of childhood.

The majority of childhood endocrine disorders represent a systemic or general deviation from the normals of development. Since we depend upon the pediatrician for the study of the normal, your clinical researches are of vast importance.

Ellis[1] states that possibility of endocrine disorders is indicated by the following signs and symptoms: Disturbances of nutrition, metabolism, growth, development, psychological changes, and mental retardation.

With a preference for clarity rather than for classification, we can divide the endocrine disorders in children into disorders of under-function and over-function of their physiological roles. Both conditions may result from simple cell changes or from benign or malignant pathology in the endocrine gland.

The majority of endocrine disorders are hypofunctional states. Therefore, endocrine hypofunctions are deficiency states, corresponding to the vitamin deficiency states. Conceiving them as such, they are less formidable as diseases, and their clinical and therapeutic approach is more readily rationalized.

Nature has shown—if not warned—us that the endocrine glands are a finely regulated interacting mechanism, with their functional capacity tuned to the body demands of physical, mental, and sexual development. Their functional role begins with the propagation of our species and continues throughout embryonic, foetal, and all periods of life.

In the human embryo, at two months, the thyroid anlage exhibits cells in structural formation; in mid-uterine-life, the thyroid has a generous blood supply and acini are present; and a few months later a hyperplastic glandular structure with colloid in the acini is found. At birth, the thyroid histology indicates an active secretory state.

Postnatally, the cellular activity of the thyroid increases until, at two years, the picture is similar to that seen in hyperthyroidism. From then onward, there is a tendency to store colloid until puberty and

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adolescence, when cytology resumes the hyperplastic type.

Thyroid cell capacity is timed physiologically to the physical, mental, and genital growth demand in the human body. This timing of the thyroid activity is important, especially during the first years of life, when half of our full stature and the greater portion of the brain tissue is developed.

To discuss the thyroid prior to considering the pituitary, so well known as the master gland, the leader of the endocrine orchestra, may appear unorthodox. The fact that the anterior pituitary gland elaborates fractions controlling the thyroid growth, sexual development, the adrenal, parathyroid, the pancreas, the metabolic fractions, diabetogenic, ketogenic, the blood chemistry, and many others, is not being disregarded, but I am impressed with the fact that the most definite endocrine disorders representing a pantrophic and advanced retarded state, particularly of the mind, growth, and sex, is the cretin.

The cretin exhibits advanced mental retardation, stunted growth, marked genital hypoplasia, myatonia, expressed by postural weaknesses, hernia, intestinal muscular atony, digestive disorders, constipation, the characteristic pot-belly, trophic skin changes and skin disorders such as eczema, and calcuim disturbances evidenced by poor dentition and delayed ossification, both in the center and the epiphysis. There is also a marked unbalanced nitrogen metabolism, resulting in abnormal retention of nitrogenous waste products. The cretin is susceptible to infection, due, I believe, to the poor development and the low protective value of the mucous membrane. The cretin is generally anaemic, has a characteristic facies, and a harsh-pitched voice.

The cretin results from a congenital athyroidea. Their cells and tissues have not had available the requisite oxidative and morphological stimulative force resident in the thyroid hormone, thyroxine. The cretin lives in a vegetative state and even regresses if not treated with thyroid hormone or extract.

A diagnosis of cretinism having been made, we must:

1. Actively and persistently treat the cretin, and
2. If a subsequent pregnancy occurs, actively treat the mother, for by so doing you will have expended every effort to prevent another case of cretinism.

Even under the most energetic therapy, the majority of cases of cretinism are predestined to generalized subnormality and particularly mental retardation. Brown[2] et al. thoroughly studied twenty-five cretins who have been actively treated from one to seven years. Seventy-five per cent of the treated cases had an I. Q. of below eighty. A few reached 100, but a treated case of cretinism with a normal I. Q. is only rarely reported.

Factors which favorably contribute to the successful results are:

1. Early diagnosis.
2. Active and persistent thyroid therapy.
3. Supplementary constitutional therapy, particularly nutrition and blood.
4. Social and educational training.

The rapidity with which the cretinic physical features disappear under therapy does not always indicate a good mental prognosis.

The dosage of thyroid extract required appears to be an individual problem. It should be regularly administered in safe amounts and the dosage gradually raised to a point of physiological tolerance—up to four months of age, 1/10 to 1/5 gr. U. S. P. thyroid extract; from four to eight months, these limits are doubled; and from eight months to sixteen months from 2/5 to 1/2 gr. may be administered daily.

For young infants, a safe measure of indicating the passing of the tolerance point is rectal temperature. A rise of .8° to 1° F. above normal in the absence of other febrile causes indicates thyroid tolerance is past and administration should be temporarily discontinued and resumed at a lower dosage when the toxic signs have disappeared.

When the thyroid gland fails to augment its physiological activity to meet the body demands, a thyroid deficiency state results and normal growth and development is retarded. Therefore, in the main, we observe the onset of the childhood hypothyroidism corresponding to age periods when increased physiological activity of the thyroid should occur but has defaulted. The most usual age for hypothyroidism to appear is about ages two years and six years, and at puberty and adolescence.

Hypothyroid states in infants are sometimes masked. In fact, in some cases, only by X-ray determination of retarded carpal development is the diagnosis established. One should consider the possibility of a hypothyroidism if there is recurrence or persistence of low-grade infections, particularly of

respiratory or gastro-intestinal tract, and nutrial disorders, or mild mental and behavior problems.

Retardation or sluggishness of early body growth and development of the teeth, and impaired muscle tone should also suggest a possible hypothyroidism. As a child reaches the juvenile ages and personality and mental attainments are measurable, a gradual and progressive appearance of mental and physical sluggishness, and particularly mental, should suggest hypothyroidism. Dry skin, recurrent eczema, slow-growing or brittle hair, and in the more advanced cases of hypothyroidism or myxedema, the thickened non-pitting skin with edema and loss of hair are of diagnostic importance.

Myxedema may occur in infancy. In an early case of myxedema, a colored child aged ten years, the symptoms were progressive mental dullness, increase in weight and muscular asthenia. The skin was thickened and dry. The B. M. R. was minus forty-six.

We have discussed only the primary hypothyroid states. The anterior pituitary secretes the thyrotropic factor which stimulates the thyroid gland. Therefore, a frank anterior pituitary deficiency will have as part of the clinical picture a hypothyroid phase. This is properly designated as secondary hypothyroidism. In the event only the secondary hypothyroid phase of the case is distinguished and thyroid therapy is exclusively administered, only this clinical phase will be benefited. The patient failing generally to improve, the tendency then is to increase thyroid administration.

This procedure carries with it three elements of harm in children:

1. The body is receiving more thyroid than required and, if prolonged, there is likely to ensue a disuse atrophy of the patient's thyroid, or,

2. Unwanted and untimely acceleration of the osseous growth occurs, or,

3. Thyrotoxic symptoms appear.

One frequently observes disuse atrophy of the thyroid gland in childhood obesity treated with thyroid extract. The history reveals increasing amounts of thyroid extract were administered to combat the progressive lowering of B.M.R. with the obesity becoming more difficult to control. Acceleration of osseous development and toxic symptoms are also observed in cases of cretinism and mongolism overtreated with thyroid extract.

In cases of mongolism, Benda[3] found that the pituitary glands show an increase in the eosinophile cells and a decrease in the basophile. The thyroid showed involutional changes. Combined anterior pituitary and thyroid therapy is beneficial to mongoloid children.

Hyperthyroidism occurs in young children and is increased in incidence and frequency as puberty is reached. Fright is an etiological factor in producing hyperthyroidism in children.

Quite frequently children are referred as cases of hyperthyroidism because of exophthalmus. A case of exophthalmus in an infant eight months old was so referred. The symptoms were twitching, irritability, recurring attacks of spasmodic cough with cyanosis. X-ray revealed an enlarged thymus. Following X-ray therapy of the thymus, the symptoms and exophthalmus were absent. The symptoms and exophthalmus later recurred. With additional X-ray therapy a marked recession of the exophthalmus and disappearance of the symptoms again occurred.

Another case of exophthalmus with weight loss and nervousness was also referred as a case of hyperthyroidism, but presented no other evidence of this disorder. The skull X-ray showed a marked under-development of the frontal bone, ridges, and sinuses. The failure of frontal bone sinus development to normal caused the eyeball to be prominent.

The thyrotoxic group of symptoms, nervousness, progressive weight loss, activation, palpitation, tachycardia, voracious appetite, fatigue and sweating, can result from insulin sensitivity which produces hypoglycæmia.

The therapy of hyperthyroidism in children should, if possible, be medical and dietetic. Surgery should be resorted to after a reasonable period of therapy with quinine hydrobromide or calcium iodide combined with a high carbohydrate diet have failed. Rest and quiet are essential to conservative therapy.

Acute thyroditis occasionally occurs, in which case local measures usually suffice. If suppuration occurs, incision and drainage are necessary.

Pituitary: The anterior pituitary gland produces numerous tropic factors such as the thyrotropic, adrenotropic, gonadotropic, metabolic, diabetogenic, ketogenic, lactogenic, and the important somatotropic or growth factor which is required particularly in the developmental ages. Pituitary infantalism exemplifies the growth, metabolic, and sexual defects occurring in the general type of anterior pituitary

deficiency. In true infantalism, the body proportions of infancy may persist.

Before these visible and measurable aspects of physical growth are evident, signs of disturbed or retarded osseous development may be detected by X-ray studies. The time of the appearance of the various osseous structures and when epiphyseal closure occurs are known.

In a case of pituitary infantalism, the skin circulation is good and in general they exhibit a good nutritional state; they are in reality a miniature body with a normal mental age.

In 1,250 cases with juvenile diabetes, White[4] found that 25 per cent showed disturbance of endocrine balance and 177 were classified pituitary—169 hypopituitary, nine hyperpituitary, ninety-four were dwarfs, five were cases of pituitary infantalism, twenty-two of the Fröhlich syndrome. There were no cases of hypothyroidism, but three hyperthyroids, twenty-eight gonads, one adrenal, and sixty-five were classified as liver disturbances.

The use of the growth hormone is not contraindicated in juvenile diabetes with infantalism. We have administered growth hormone in these cases with very favorable results. In fact, one child is generally much better when on growth hormone and insulin than when on insulin alone. White advocates the use of growth hormone in juvenile diabetes with infantalism, although insulin requirement is usually increased, the improved economic positions resulting from added growth offset the possible aggravation of the diabetes.

Sexual underdevelopment occurs usually in the hypopituitary state. The hypogonadism is in a direct ratio to the time of onset and the degree of deficiency of the anterior pituitary lobe. In many cases children approach puberty without evidence of gonadal underfunction. During the pubertal period they fail to mature fully because anterior pituitary function does not rise to the normal physiological demands required for this period. In both sexes characteristic hypogonadal obesity develops about the mammary, abdominal, pelvic, and trochanteric regions. The obesity may become general if hypothyroidism is also present. There is also the lean type of hypo-pituitary hypogonadism. These individuals are usually underweight and have a tendency toward the eunuchoid physique. The obesity type has skin of a fine texture with the so-called "peaches and cream" complexion. The hair is of a fine downy type. These individuals show tendency to spontaneous bruising and hyperextension at the elbow and knee joints. Mentally and physically they lack normal virilistic activities.

The cellular foundation for the adolescent changes is formed before puberty. Depending upon their sex, individuals evidence their typical secondary sexual characteristics. In the female, one observes a broadening of the diameter of the hips, due to increased width of the pelvic bone growth and deposition of subcutaneous fat in the pelvic region. This results in the shoulder girdle being narrower than the pelvic girdle in the female, and this is the opposite of that found in the male. Adolescence begins at puberty and ends when adulthood is reached.

Body growth is an orderly and generalized process in which the trunk and extremities participate at unequal growth rates until normal proportionate growth for the age results.

A normal height in adolescence may be the result of a diminished rate of trunk growth and an increased rate in the lower extremity growth. Whereas the pituitary somatotropic stimulates growth, the gonad determines whether growth factor action continues or ceases.

Mortimer[5] is a pioneer in the study of endocrines and the osseous pattern, particularly frontal sinus development which fails to occur in young hypophysectomized animals, but development of these frontal sinuses occurs when this animal receives a pituitary transplant.

Schaefer[6] et al. observed that in 258 cases of endocrinopathies from ages eight to fifteen years there were ninety-one cases or 35.2 per cent showing single or multiple evidence of chondro-epiphysitis. Other investigators have observed a high incidence of slipped epiphyses in Fröhlich syndrome.

Hurxthal[7] et al. describes six characteristic bone changes in hypogonadism:

1. Tendency to longer bone growth.
2. Delayed epiphyseal closure.
3. Subcalcification.
4. Thin walled normal sized trabeculation.
5. Thinning of cortical wall.
6. Roughening of the metaphyseal margin of the growing bone.

Normal gonadal development and function is dependent upon the anterior pituitary gonadotropic factor, but adrenal cortical or thyroid disorders may modify the anterior pituitary gonadal action during

infancy, juvenile puberty, and adolescence. The cretin, the adreno-genital syndrome and pubertas praecox clearly indicate the respective roles of the thyroid, adrenal cortex, and pineal in disturbing gonadal evolution and function.

The anterior pituitary, thyroid, and adrenal cortex maintain more or less correlated states of activity on the gonads. The role of the pineal and thymus glands in gonadal development is still in a formulative state.

Mumps is unquestionably an active agent in producing atrophy of the testes. I believe that every prophylactic and therapeutic measure should be availed of in controlling this disease.

Rea[8] believes that about 10 per cent of human undescended testes are fertile and 82 per cent of those treated by orchidopexy have active viable sperm but never attain full normalcy.

Cryptorchidism results from endocrine and non-endocrine anatomical conditions.

Anterior lobe hypofunction is very likely responsible for most of the cases of true bilateral cryptorchidism. A true cryptorchid testis is undersized and in bilateral cases the scrotum and penis are small.

Considerable controversy exists on therapy in cryptorchidism:

1. Conservatism or expectance for spontaneous descent,
2. The indications for surgery, and,
3. The age when therapy should be instituted, the method of administration, and the type of hormone product advocated.

The plea for the natural forces is advocated by Drake[9] and most convincingly by Johnson[9]. Opposed to this conservatism is the report of Gordon-Taylor[10] that, in fifty cases of neoplasm of the testes, fifteen occurred in retained testes.

The report on cryptorchidism by Johnson covers a seven-year period during which he examined 31,609 members of Boys' Clubs and he observed an incidence of seventeen per thousand in boys from seven to seventeen years of age. He cites Army statistics of two cases per thousand in the World War recruits examined, a difference of fifteen cases per thousand when compared with the normal incidence of seventeen cases observed in over 30,000 boys.

Of the total 544 cases of undescended testes 246 were bilateral, seventeen of which were associated with Fröhlich syndrome as compared to eleven cases of Fröhlich syndrome with unilateral undescended testis in a total of 298. In this series of cases, Fröhlich syndrome was more frequently observed without cryptorchidism. In only five cases of the total cryptorchid cases, seven to nine years of age, had gonadotropic substances been injected and all were failures.

Spontaneous descent of a normal testes occurred in three hundred cases; bilateral 162 and unilateral 138. Between ages eleven and thirteen the testes descended spontaneously in 174 cases. This is the age of puberty and the age period when organotherapy shows its best results of 68 per cent cures and 32 per cent failures.

Of the 544 cases, sixty-three cases of recent admission had not been re-examined. With an established 29 per cent average turnover loss of members yearly, a seven year total loss of 157 cases is computed. The calculated loss in the number of undescended testes group is 220 and it actually is 217.

Johnson concludes, "Do not operate for undescended testes before sixteenth year unless operation is indicated by some associated condition.

"Glandular therapy before the age of puberty is useless and harmful, and at the age of puberty is unnecessary. The greatest number of spontaneous descent occurs between the ages of eleven to fourteen. After fourteen years of age there is a marked fall in the incidence of spontaneous descent."

There is a unity of opinion that all cryptorchid cases associated with anatomical anomalies require operation.

The difficulty is in determining when abnormal anatomical structures prevent testicular descent. Spence[11] states the superficial inguinal ectopic testes should not be treated by hormone preparations because it has no natural pathway. He believes this type of cryptorchid testis is more palpable than the inguinal type; it is not displaceable upwards into the inguinal canal; it may be displaced towards the femoral region and lateral to the neck of the scrotum but not into the scrotum as will occur in an inguinal testis.

The choice of therapy lies between:

1. Pregnancy urine extract (P. U. E.) (A. P. L.) or pregnant mare's serum extract.
2. Anterior pituitary extract injections—maturity or gonadotropic fraction.
3. Male hormone injections.
4. Oral administration of anterior pituitary and thyroid.

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The possibility of the A. P. L. substance producing anti-hormone and accounting for the unsuccessfully treated cases is negated by the reports of Dorff[12] and Saphir[13]. A pertinent factor in the failures in P. U. E. therapy is its activity which varies in the different animal species. Rodent physiology is not comparable to human physiology. The ovary of the immature macacus monkey does not react to A. P. L. substance whereas it will to a human anterior pituitary extract containing Prolan.

Thompson[14] et al. in a carefully controlled series of cryptorchid cases shows only 20 per cent cures with A. P. L. substance as compared with an average of 61 per cent cases of cures in the literature. They stress the importance of excluding cases of pseudo-cryptorchidism or migratory testes. Thompson infers that treatment should usually be limited to two months and at the daily dosage of from 100 to 1,000 rat units of A. P. L.

The best results in cryptorchidism with A. P. L. occur during the pubertal years. However, the undesired therapeutic responses have been reported when P. U. E. is administered: œdema of the scrotum, return of the testes to former size or atrophy after discontinuing therapy, and evidence of premature puberty with abnormal hypertrophy of the phallus. The extent of this induced precocious state in the general body structure has not been fully studied.

The above considerations have caused me to limit the use of P. U. E., except preoperatively or only for from six to eight weeks in selected cases. P. U. E. therapy must be evaluated by the results observed after stopping therapy and by its failures more than by its successes in the pubertal ages. The production of œdema in the gonads is, I believe, highly undesirable; histological studies of the testes in the P. U. E. treated animal demonstrate œdema or hemorrhage. P. U. E. has possible values in treating the hypospadic underdeveloped penis prior to plastic operation, but here again I have met with failure.

I have used anterior pituitary extract, in cryptorchidism associated with hypopituitarism, from 3 to 6 gr. daily and thyroid extract 1/3 gr. daily.

The results of all therapies are not consistent in the clinical studies reported. In all treated cases soreness or pain in the cryptorchid testes requires that therapy be discontinued and surgical opinion sought. The enlarging testes may, I have observed, become impacted in the anatomical abnormalities and require orchidopexy.

The results obtained with testosterone propionate therapy in dosage of from 10 to 25 mg. two or three times a week on developing a hypoplastic and/or cryptorchid gonad at late purberty or adolescent ages is encouraging. There is no question of the constitutional and psychic improvement. A prominent therapeutic action is the growth effect on the underdeveloped penis and the improved secondary sexual features.

It should be noted that the penis and gonads are derived from different embryonic anlage. I have observed an hypertrophied penis with infantile testes and underdeveloped scroti in two brothers, ages six and eighteen years.

Adiposo-genital syndrome, or Fröhlich syndrome: Cryptorchidism and hypo-plastic gonads may occur with the characteristic feminine type obesity, the hyperextension of the elbow joints, the characteristic facies, peaches and cream complexion, and the fine textured skin. The height is usually a short normal with the length of the lower extremities tending to be increased. Mentally they are of good intelligence and worry-free.

Diet regulation is essential for favorable results in the Fröhlich syndrome: 900 to 1,200 calories with a low carbohydrate and fat content are required. Anterior pituitary and thyroid extract therapy appear best fitted to this condition. P. U. E. and thyroid extract therapy is advocated by some.

The failure to control obesity in the Fröhlich is invariably associated with poor therapeutic results yet weight reduction alone does not produce an improved genital state. Combined weight reduction and endocrine therapy are required for effective results.

Certain human endocrine states illustrate the role of the anterior lobe of the pituitary in maintaining gonad function after maturity as well as maintaining the general metabolic and other endocrine activities in the human. Cysts, infections, sepsis and its emboli may cause total or partial destruction of the anterior pituitary lobe. Tumors of intra- or extra-pituitary origin can equally impair pituitary function. A young girl, age twelve years, with pituitary cyst had primary amenorrhea and lack of genital development. Thyroid function was also diminished. A multiglandular and metabolic breakdown occurs if the pituitary lesion process progresses and, if uncontrolled by endocrine therapy, death may occur as

in Simmond's disease. This latter disease is characterized by progressive weight loss, emaciation, profound asthenia, hypotension, anorexia, atrophy of the skin, loss of nails, teeth, and hair, coldness of the body, hypothermia, mental depression, amenorrhea, atrophy of the internal and external genitalia, and multiglandular atrophy and senile appearance.

A serious and often critical symptom of Simmond's disease is the sudden hypoglycæmia. The attack may be mild and associated with a confused state of mind, or it may be a deep terminal coma. Cysts of the pituitary gland, unless extensive and causing pressure, do not produce an acute symptom. In such cases we generally observe retarded or cessation of growth, retarded genital development, lack of secondary sexual characteristics, generalized or regional obesity, although the case may be of normal weight or thin, and skin changes akin to those observed in the Fröhlich type. These cases may complain of vertigo and dizziness and this may be the result of low blood sugar. Loss of vision is frequently the initial sign of a pituitary cyst.

THERAPY: Dry crude anterior pituitary and whole gland, extracts and crude and standardized liquid pituitary extracts are available for treatment. The former are administered orally. Oral therapeutic effects are a highly controversial subject. I believe that oral anterior pituitary therapy produces therapeutic effects. It should be administered directly after eating to obtain the benefit of the acid extraction in the stomach.

Sir Walter Langdon-Brown,[15] Zondek,[16] and Goldzieher[17] advise oral administration of anterior pituitary extract. The results obtained with posterior lobe dry extract nasal insufflations in diabetes insipidus strongly indicate its superiority over the hypodermic administration of pitressin.

The dosage of extracts of the whole gland and anterior portion varies from one to six grains daily, depending on the age of the child. Others prescribe a higher dosage, but I prefer to maintain the lowest dosage possible because the average adult pituitary weighs less than 15 grains.

The crude liquid extracts for hypodermic use are not standardized and their activity and tropic factor and content vary. They are indicated in Simmond's disease but are less dependable in advanced anterior hypofunction than the various combined or individual Collip factors.* The unit content per c. c. of the tropic factors varies, usually from 50-100 units being present. No factor is free from small quantities of other factors. This is probably an asset and not a liability.

For the treatment of primary amenorrhea due to anterior pituitary deficiency, a prolan preparation obtained from pregnant mares' serum is now available. Gonadal stimulation results from the prolan contained in this preparation. It is not a true anterior gonadotropic factor but is presumed to be of chorionic origin. The ampoule contains ten units. Then ten units are given every other day for three days, and thirty units are given in the last hypodermic. If after three weeks no menses occur, another series is administered. A series of these injections is usually required in primary amenorrhea.

Growth preparations are widely used but the successful case reports on growth hormone reveal that thyroid is liberally administered. The growth effect of thyroid extract is well recognized and this alters the conclusions given on the exclusive effect of growth hormone.

My results with growth hormone preparation have not been satisfactory, as compared to the results reported or my results with oral anterior pituitary therapy combined with doses of thyroid extract.† The inference to be drawn is that the growth content is inadequate and standardization by weight gain is possibly another factor. The suggested standardization of growth hormone by the effect on the osseous development of the rat's tail is a more scientific growth standardization.

Hoffman,[18] Wernicke,[19] and others have treated pubertal and adolescent male breast hypertrophy with 25 mgm. testosterone propionate, injected twice weekly. Hoffman reports complete regression of the mass in fourteen cases and 75 per cent regression in nine cases. The duration of the therapy was from two to five months and in some cases 50 per cent of the regression occurred in the first four weeks.

In cases where a nodule persisted after a course of injections, it disappeared about one month later.

Two cases failed to regress and Wernicke had a

*Somatrotropic (growth), thyrotropic, gonadotropic (maturity), adrenotropic, Polyansyn, factors compounded in normal proportions.

†I have previously stated that thyroid extract in small dosage is needed to evolute a cell before the growth factor can mature its growth.

similar failure. Both authors report recurrences and advised reinstituting therapy.

Testicular atrophy appears to be associated with a large percentage of cases according to Wernicke.

Male breast hyperplasia frequently regresses spontaneously around ages of fourteen to fifteen years; therefore it would seem advisable to let nature have a chance as in cryptorchidism.

The treatment of vaginitis with estrogenic substances is well confirmed by numerous workers. Mazer[20] recently reported his results in 118 cases. In only three cases were the results failures. He reports on the assays of the various estrogenic substances—a matter of prime importance in estrogenic therapy. It was found that 1 gm. of theelin (œstrone) yielded 1,000,000 R. U.; 1 gm. Progynon D. H.; 10,000,000 R. U. (œstradiol) and 1 gm. Progynon B (œstradiol benzoate) 5,500,000 R. U.

Oral estrogenic therapy was found ineffective in vaginitis.

Therapy should be maintained for eight weeks and cures are dependent upon creating a temporary maturity state of the vaginal mucuosa, and reducing the pH. of the vaginal secretion to a point below six.

The injection every other day for eight weeks of from 500 to 1,500 R. U. gave the good results with recurrence in 10 per cent of seventy-eight cases.

Vaginal therapy gave the best results. Thirty-three of thirty-four cases administered nightly a vaginal suppository containing 200 R. U. of Progynon B. had a clinical and bacteriological cure. Follow-up of twenty-six cases revealed no recurrences.

Side effects, pubic hair (7 per cent), breast hypertrophy (26 per cent), uterine bleeding (10 per cent), all of temporary nature, were experienced less frequently in vaginal therapy. Breast hypertrophy usually disappears in one month.

An interesting endocrine disorder of childhood is that of adrenal deficiency, due to a hemorrhage within the gland with destruction of the tissue. The symptoms are essentially those of extreme shock, and acute adrenal hemorrhage has seldom been diagnosed except post-mortem. It should be suspected in children with signs of unaccountable and unexpected collapse, or when the general clinical picture is that of lobar pneumonia with negative chest signs and a state of hyperpyrexia and sudden collapse. Surgery and adrenal cortin therapy are the only measures which give the slightest hope for recovery in adrenal hemorrhage and a palpable tumor. Therapy would probably be ineffectual, but cortin and glucose injections are indicated in infancy cases with no palpable adrenal tumor.

Renshaw and Manning[21] report a case of Addison's disease in a male child age twelve years in which the necropsy revealed extensive tuberculosis of both adrenal glands. The case is of interest because of the afebrile onset of severe and acute abdominal (R. L. Q.) pain and tenderness, nausea and vomiting. Abdominal pain had been complained of during the past two years. The R. L. Q. tenderness and pain increased; the urine showed pus cells. The right region of the pararectal cul de sac was tender on rectal examination. Two days later there was a rise of temperature to 100° F. and pyelitis was considered. The patient died the following day with a temperature of 97.8° F. and a pulse rate of from 100 to 120. The only sign suggesting Addison's disease was the dirty brown color of the skin, as though the patient had not washed, and two or three other small dark brown spots on the forearms. The post-mortem showed extensive tuberculosis of both adrenals and a tuberculous abscess of the right kidney, accounting for the pus and the possible diagnosis of pyelitis.

I observed a corresponding early acute clinical picture in a female age forty years. A biopsy of the pigmented skin was diagnosed as Addison's disease and in as much as the patient has survived, the diagnosis lacks confirmation. She still requires excess salt intake to maintain her in a reasonable good condition and elimination of salt produces Addisonian symptoms.

Adrenal cortical hormone has been found effective in the treatment of burns by Einhauser and Wilson[22] and Stewart[23]. Desoxycorticosterone rapidly corrected the blood changes associated with and beginning within a few hours and reaching lowest level in from twelve to thirty hours. The blood changes observed are in a fall in serum sodium, a rise in serum potassium, the blood chlorides, urea and non-protein nitrogen and occasional increase in corpuscular concentration.

The blood changes were rapidly corrected and circulatory failure was often dramatically relieved, but not always.

Einhauser used Vitamin C in conjunction with adrenal cortical hormone.

Hislop[24] administered adrenal cortical extracts to infants with marasmus. They received 1 mm. of

eucortone per two pounds of body weight daily for fourteen days, followed by a rest period of ten to fourteen days. He resumed therapy for six to ten weeks. The mortality rate was lowered from above 40 per cent to 14 per cent.

Weinberg[25] reported a case of a female child age twenty months with myatonia congenita, exhibiting a complete loss of muscle power in the lower extremities and partial but progressive loss in the upper extremities. He administered 1/2 cc. of Exchatin (adrenal cortical hormone) three times a week for six weeks and after that 1/2 to 1 cc. a week for eight weeks. Improvement continued and at the end of a year the child could walk a half mile.

The therapy suggested itself because adrenal cortex is antagonistic to quinine and the latter is specific for myotonia congenita which is the opposite state of myatonia congenita.

Adrenal cortex extract has been found to produce favorable results in childhood asthma. Pottenger[30] reports improvement of the allergic state in 84 per cent and general improvement in 90 per cent of the fifty patients treated.

Cahill[26] has demonstrated by air injection enlargement of the adrenal gland in two out of four cases of macrogenitosomia. Operation was refused and confirmation could not be obtained.

In 1,000 cases of convulsions in children, spasmophilia or tetany accounted for 8.9 per cent with nineteen cases occurring in children from one to six months of age, and in fifty-seven cases from six to thirty-six months of age (Peterman[27]).

Friderichsen[28] reported an unusual case of tetany in a suckling aged five months. The infant suddenly collapsed, laryngeal spasm was present, and her hands were in tetany position. The onset of the symptom occurred following two months of cow's milk mixture during the day and two breast feedings during the night. The serum calcium was 6.7 mg. per 100 cc. calcium chloride 15 gr. t. i. d.; Vitamin D, 5,000 i.u. daily and 200 gm. of the mother's milk supplemented by oatmeal soup and later cow's milk, were given. At the end of the second week, convulsions and Trousseau's sign had disappeared, but laryngeal spasm persisted. X-ray of the infant's carpus and ulnar epiphysis revealed an osseous development of a seventeen-month-old infant.

The infant did not respond completely to the tetany therapy, and the serum calcium continued low. Two months later the laryngeal spasm ceased. The serum calcium was now 9 mg. and the serum phosphorus was 8 mg. per 100 cc. of blood. Clinical investigation of the mother was then undertaken and a diagnosis of the hyperparathyroidism was made from the blood studies (serum calcium 16.4 mg., serum phosphorus 2.5 mg., blood phosphotase 0.90 (infant's was 0.12) mg. per 100 cc. of blood) and X-ray which revealed bone cysts in left pelvic bone and femur; calcium deposits in kidney calices and palpable tumor in the region of the thyroid. This was removed by operation and histologically was proven as hyperplastic adenomatous parathyroid gland.

The mother's milk revealed a 33 per cent increase of calcium over a normal control. The author conceives the case as phosphate tetany due to hypofunction of the infant's parathyroid gland, the greater content of phosphorus in cow's milk precipitating the tetany.

Taylor[29] reports an unsuccessful result in Fragilitas Ossium treated with parathyroid extract for two months. Improvement occurred, following the administration of calcium phosphorus and vitamin D.

The thymus gland can cause pressure on the trachea resulting in respiratory and expiratory stridor; this symptom when continuous and associated with dyspnœa, cyanosis, and dysphagia, is sufficient to warrant X-ray examination of the thymus gland. In the differential diagnosis we must consider thyroid colloid goitre, vocal cord lesions, laryngeal and tongue lesions. All cases showing thymic enlargement do not evidence symptoms.

The size of an endocrine gland is no criterion of its hormonic capacity. The several severe endocrinopathies associated with small adenomas of the thyroid, pancreas, and the parathyroid and eosinophlic and basophilic adenoma of the pituitary are ample evidence that the size of the gland is not indicative of its hormonic capacity.

In three cases I have observed, the X-ray showed a normal sized shadow after X-ray therapy, yet the symptoms persisted or later recurred, requiring further X-ray therapy to control the symptoms of stridor, cyanosis, and convulsive seizures.

Evidence of hypergonadism may occur as early as two or three years of age in either sex. Besides the hypergenitalism there is associated precocious development of hirsuties, muscular and osseous symptoms and voice changes. Fertility may be advanced in older children.

Growth is accelerated early but the premature

closure of the epiphyses due to the gonadal influence eventually stops growth and a short stature may occur as a result. Mental development lags behind the computed age of somatic development.

Hypergenitalism usually results from tumors of the testes, ovary, pineal, adrenal cortex and the pituitary. The testicular lesions are: carcinoma, teratoma, seminoma, chorioepitheloma. The three latter produce large amounts of A. P. L. The ovarian tumors are granulosa cell tumors and carcinoma.

Pinealomas produce hypergenitalism; however, more frequently they do not produce macrogenitosomia. Operation and X-ray or vice versa is the best method of therapy for pineal tumors.

CONCLUSION: Endocrine therapy in childhood, to be sucessful, must be based on the following three requirements.

1. Complete constitutional and endocrine diagnosis.

2. Knowledge of the normal physiology of childhood—body, metabolism, growth, and sexual development in particular—and a comprehension of the direct and interrelated action which the endocrine gland disorders have on the aforementioned specific and general physiologic processes.

3. A knowledge of their direct therapeutic effect of the hormone upon the existing normal and abnormal physiological body processes, and their indirect effect upon endocrine interrelationships.

The diagnosis of endocrine disorders in children is essentially the recognition of those signs and symptoms which demonstrate that the specific biophysiological action of the various hormone or hormones on the developing tissues is at variance with the normal development and the considered chronological sequences of the body development as a whole, and of its specialized parts.

An equally important factor is that the type and dosage of endocrine therapy administered should be the minimal requirement of the child undergoing treatment. This factor is fundamental and must not be minimized. When endocrine therapy is exhibited in excess of the deficiency, it permits the already subnormal physiological response of the gland or glands to diminish its activity with the result that disuse atrophy of the gland occurs.

The treatment of endocrine disorders in children is more important than adult disorders. There always exists the probability of over-treatment and the induction of abnormal results, such as precocious osseous development or genital development. The objective of endocrine therapy in children is to establish normalcy.

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THE PRESENT STATUS OF OUR UNDERSTANDING OF CONVULSIVE DISORDERS.*

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The statement of Dr. Lennox that convulsive disorders are as common as diabetes or active tuberculosis emphasizes the widespread nature of these conditions. This group of physicians certainly does not need any stimulus to make them aware of the widespread occurrence of convulsions in the human animal, nor of the difficulty of their diagnosis and cure. In every way the study of convulsions is a live subject, as each year brings forth many new discoveries in the field of pathology, chemistry and therapeutics which are definitely related to these disorders. However, the results of research, the clinical observations and the new laboratory techniques advance so fast that summary is often needed, so that it was thought worthy of interest to give a picture of the present status of these advancing ideas; to give a bird's eye view of what is new; and to attempt to correlate it with the fundamental ideas of the past.

To make such a summary of real value it is necessary that work that is not yet published be quoted and that trends as well as actual laboratory findings be given interpretations—interpretations perhaps not warranted by the facts, but which will pique the interest and stimulate discussion.

In the beginning, it is taken for granted that all here are familiar with the recent works dealing with the disease, so that all the references will be confined to ideas brought to fruition or originally suggested during the last two years. Also, in order that the subject matter may have form, the presentation will be divided into four sections. First, the changes in classification are to be considered under the title of DEFINITION; second, the ETIOLOGY of the disease will be considered, a subject so large that sub-groups immediately form under this heading and consideration must be given to cell membranes, electrolytes, and differences of potention, as well as trauma, heredity and congenital anomalies. The third division will be DIAGNOSIS, and the fourth the NEW ADVANCES IN TREATMENT, while in conclusion something will be said of PROGNOSIS.

At the time of the formation of the Section on Convulsive Disorders of the American Psychiatric Association, about fifteen years ago, the consensus of opinion among psychiatrists was that there was no such thing as the disease epilepsy, so it was thought best to get away from that term in order to escape all its historical as well as mystical significance. The epilepsies became the convulsive disorders, and under the new title these were divided into the symptomatic or secondary, namely those that had cause, and the idiopathic, those disorders which arose on their own, so to speak. Subsequently, it was found that there were many types of convulsions; then the

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convulsion itself began to be considered only as a symptom, and, finally, it was realized that practically half of the persons studied had many of the characteristics of persons suffering from convulsions, but never had that motor expression—so the term "The Convulsive Disorders" is now to be discarded and, perhaps, the word Epilepsy, meaning "to be seized or taken" will be again used to denote any disorder in which one is seized suddenly by some autogenous force. But now it will be necessary to speak of the epilepsies, and, as it is believed there is actual brain damage in all cases, these epilepsies or seizures will be classed as secondary and cryptogenic, thus indicating when the cause is known and when it is hidden.

Drs. Gibbs and Lennox have indicated what they consider a more fundamental characteristic of epilepsy, namely a cerebral dysrhythmia. They believe that all epileptics would show this certain abnormal rhythm at the time of attack and that the diagnosis of epilepsy should be confined to disorders which are accompanied by this type of abnormal rhythm. The disturbance noted in the electroencephalographic tracing may be of three types. One of these is said to be characteristic of small attacks, another of large attacks and the third of psychic variants. With these changes in the so-called Berger rhythm there may be or may not be recognizable motor expression; yet these authors would call all persons epileptics or potential epileptics because they demonstrate this cerebral dysrhythmia. If this definition is accepted it will probably cause a complete re-arrangement of terms. Hypoglycemic shocks, narcolepsy, syncope following carotid sinus pressure, as well as other momentary losses of consciousness, will have to be redefined according to the rhythms produced.

Pyknolepsy has already disappeared and now is considered a form of petit mal. Many old terms have fallen by the wayside, as this conception has already revitalized all the classification of seizures. It is agreed that there is no such thing as epileptic personality, epileptic constitution or epileptic psychosis. The states once so designated exist, but they are not confined to persons with epilepsy nor are they considered characteristic.

At the present moment the physiologist would have us believe that the cause of convulsions is the changing of the ion concentration on the semi-permeable surface films of the cells, which momentarily increases the permeability of the cellular surface. Thus, either of two situations may be the fundamental causative factor of the convulsion; first, a change in ion concentration on the cell surface which results in cell excitation leading in turn to convulsion, or, secondly, the density of the cell membranes may be lowered, thus furthering the increase in permeability on stimulation and increasing the excitability of the cell. An example of the first type of reaction is the occurrence of convulsions when the circulation is restored after strangulation. The anoxia produced by strangling causes one convulsion by upsetting ion concentration; then when later the oxygen is returned the newly established equilibrium of surface ions is again upset, so excitation again occurs. The second type of reaction, namely the lowering of the density of the cell membranes, increases the permeability facilitating excitation so normally subliminal stimuli become effective. This process may be brought about by anoxia, swelling of the brain, alkalosis and hyperventilation, while lipoid soluble anesthetics and hypnotics increase the density of cell membranes. All of which is translated to mean that convulsions may rise more or less spontaneously from changes in ion concentration on the surface of cells, which cause the fundamental requisite of convulsions—cell excitation—or that the cell membranes may by outside factors be made more permeable so that excitation occurs from previous non-exciting factors. In other words, we still have the old idea of overpowering epileptogenous force on one hand and a lowered threshold on the other, but now we speak of individual cells and measure their surface tension as well as ion concentration.

This excitation of the cell probably produces the abnormal potential differences appearing as dysrhythmias on the electroencephalographic tracing which Gibbs and Lennox consider so characteristic of epilepsy. Erickson has followed these changes through the surface of the cerebrum and from one hemisphere to another showing that they follow nerve fibers and are not spread over the surface of the brain, while Penfield indicates that these differences in potential, one setup, seem to follow habitual pathways. The convulsion or motor expression, according to him, depends on the result of cell excitation reaching the motor area of the cerebrum.

Lennox and Merritt suggest a relation between the amount of CO_2 and the type of spell. Petit mal occurs with lowered CO_2 and grand mal occurs as the CO_2 tension increases—thus the difference in

potential is noted as it arises in the cell and is followed as it flows down the nerve fiber, either to reach a motor cell, thus producing a fit, or to pass out only to be recorded by the encephalogram as a dysrhythmia. Penfield, while discussing post-traumatic convulsions, admits that convulsions do not arise from a-cellular scars, but describes a zone about the post-traumatic scar as well as about some anomalies of the brain where the cellular metabolism is disturbed, indicating that it is in these sick cells in this border zone that the excitation occurs which may be expressed as posttraumatic epilepsy.

Several statistical studies of persons with brain injuries have a tendency to change our viewpoint regarding trauma as a cause. The probability of a head injury, even though severe, producing later a convulsion is by no means so great as once feared. The percentage of cases in which convulsions are an unquestioned sequela is no more than 3 per cent. An analysis of the effect of vital red on epileptic patients, on the other hand, seems to indicate that substances outside of the central nervous system may have an etiological significance. Robert B. Aird has shown that this dye, which experimentally in animals as well as in a few human patients has shown its ability to decrease convulsions, acts by increasing the carrier between blood and spinal fluid, thus indicating that in some cases toxins from other parts of the body may cause convulsions. However, it is possible that this dye acts on all nerve cells as well as the cells of the choroid plexus to effect this increased permeability, so that the surface tension of the cells is still the deciding factor.

Heredity as a causative factor has had new emphasis. The application of the electroencephalogram to the relatives of epileptics had had a profound effect on the views on heredity. Lennox and others have found abnormal waves characteristic of petit mal, grand mal and physic variants in a large proportion of the forebears of epileptic patients. They feel that the mating of two persons who demonstrate these characteristic rhythms will in a large percentage of instances produce a child with abnormal rhythm, who would be a potential, if not an actual epileptic. It would seem then that it must be possible for abnormalities in surface tension of the cells or at least abnormal differences in potential of cellular charge to be carried by the gene and transmitted from one generation to another. At the present moment it appears more important to know your fiance's electroencephalogram than her Wassermann.

Diagnosis of epilepsy "at present" apparently depends on the electroencephalogram, but obviously this instrumeut cannot always be used, and, until more is known regarding the meaning of brain rhythms, the older criteria will be maintained until epilepsy and cerebral dysrhythmia are found to be synonymous. The significance of the abnormal waves, however, has already been discussed. Beyond this remarkable addition to our diagnostic technique, very little has recently been added. It has been shown that the so-called wandering ventricle, once thought indicative of a cortical scar pulling the ventricle out of line, is caused by cortical atrophy alone, so does not necessarily indicate scar formation. Therefore, such a finding in the pneumo-encephalogram does not necessitate surgical intervention. Hypoglycemia, formerly considered by some as an important causative factor, is best studied by considering the effects of artificially produced hypoglycemia rather than by any form of glucose tolerance curve. It is fairly well conceded that if a blood sugar as low as fifty is thus produced in the patient without the patient showing characteristic symptoms, spontaneous hypoglycemia is not the cause of the attacks.

Several new steps have been made in the treatment of convulsive disorders. Bromide therapy has been renewed especially in the treatment of petit mal. It is combined with a low salt diet. Thus a small dose can be given to produce greater results. This therapy, however, must be watched closely by means of frequent blood bromides, as a skin rash is produced more easily in the presence of a low chloride. Arsenic may be added in this case as a skin protective. Dilantin has apparently come to stay. The drug now in purer form causes fewer toxic symptoms. It seems to cause vitamin "C" deficiency, so this substance is usually added when this drug is given. Another new venture is the giving of tremendous doses of phenobarbital to refractory cases of epilepsy, while controlling the somnolence with benzedrine. Caffein has been used by some for this same purpose. Metrazol convulsions given in furor states shorten the attack.

The electroencephalogram has also led to two new therapeutic attempts. First, when a source of abnormal rhythm can be focalized by this procedure in a silent area of the brain, that portion of the cere-

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brum is removed although no other pathology has been demonstrated. Some success has been reported when the frontal tips were removed in this manner. Second, as experimentally hypoglycemia seemed to stop the three-minute wave and spike characteristic of petit mal, mild hypoglycemia shocks have been used for this purpose. Apparently, in some instances the attacks can be stopped by this method at least for several days.

Dehydration and the ketogenic diet have seen their day and gone: the former, because to be effective it had to be so severely applied it was not practical; while the latter was found to have very little effect except in children in whom it was almost impossible to maintain it in an adequate manner for more than several months.

Therapeutic surgery, in the main, is still confined to the post-traumatic cases. In the hands of Penfield, Foerster and a few others it offers something. Spurling states that a five year follow-up on a selected group of patients who had had excision of cortical scars, showed 75 per cent to be symptom-free. Penfield questioned this, stating that 40 per cent of cures was all he hoped to obtain. He also stated that he used sedation from one to two years after operation. His recent work on microgyria, as well as his insistence on the removal of the irritating border zone, may lead to better results in this field. Descriptions of operations on the sympathetics to stop convulsions have practically disappeared from the literature.

Several series of extramural cases have been carefully followed and a good deal of work done on the causes of deterioration. From this work it is learned that deterioration in the main depends on actual cell destruction, which in turn varies with the individual make up, but not with the number of convulsions. On the other hand, extramural cases, cases that maintain a more normal life, are less likely to show the mental changes so often seen in an institution. Nevertheless, prognosis in the epileptics is still poor; but, there are many that are maintained in active life by properly managed medical care, while surgery is gradually extending its usefulness, from considering only the tumors and other obvious lesions, to the treatment of a more delicate nature.

In conclusion, from the above discussion it is obvious that the subject of convulsive disorders is a live one. What seems true today is contradicted tomorrow, but each year heralds a new advance, small perhaps but gradually leading toward a final victory over epilepsy, one of the main scourges of mankind.

ENDOCRINOLOGY BRIEFS.

The Testes.

JOHN P. LYNCH, M.D.,
Richmond, Virginia.

The crude physiology of the testes probably has been known to man longer than any other endocrine function. From the legend of the beaver, Castor, who cut off his genitals to escape a pursuing hunter, to the recent synthesis of testosterone propionate, is a long and fascinating history including the work with fowls of such men as Berthold in 1849, and the attempt of Brown-Sequard at human rejuvenation with animal glands in 1889.

There are two essential types of cells in the testicle, the sexual or spermatogenic cells of the seminiferous tubules and the supporting or interstitial cells of Leydig. Experimental work indicates that each type has a hormonal function. The hormone of the spermatogenic cells has not been isolated nor its action defined. The best known and most active hormone of the interstitial cells of Leydig is testosterone which is chemically related to progesterone of the ovaries and desoxycorticosterone of the adrenal gland, both of which glands arise from the same embryologic anlage as the testes.

The pituitary gland produces the same hormones for the stimulation of sex glands in the male and female. The follicle stimulating hormone acts upon the spermatogenic cells of the male while the luteinizing hormone acts upon the interstitial cells.

There is a physiological balance between the gonadotropic factors of the pituitary on the one hand and the active hormone of the testes on the other. If pituitary stimulation is inadequate, the characteristics resulting from full gonad development will be lacking. If the gonads themselves fail to respond to

normal stimulation, the pituitary becomes overactive and somatic symptoms result, as in the male climacteric.

The primary function of the pituitary as far as the sex organs are concerned is stimulation of the gonads. The actions of the sex hormone produced by the interstitial cells of the testes are to cause growth of the penis, scrotum, prostate, seminal vesicles, vas deferens, epididymis, body hair, beard and pitch of the voice, and to aid in the closure of the epiphyses.

THERAPY

Treatment then resolves itself into two approaches: (1) Those conditions caused by a lack of gonadotropic stimulation, and (2) those conditions caused by a lack of gonadal function itself.

Fröhlich syndrome, undescended testes, hypogenitalism, and certain types of sterility are due primarily to failure of pituitary stimulation. Thus it would seem logical and results thus far obtained are encouraging that the anterior pituitary gonadotropic factor be used for therapy. This is not to be confused with the pregnancy urine anterior pituitary-like hormones which in human beings stimulate the interstitial but not the spermatogenic tissue. Recently pregnant mare's serum has been found potent as a stimulator of both types of gonad cells. Manufacturers enclose suggested dosage of both these products. Further experience will alone tell us what doses are effective. As a general rule frequent small dosage is preferable to infrequent large amounts. These materials are given intramuscularly daily to weekly, depending on specific indications. Unfortunately the expense, averaging about one dollar per average dose, makes the use somewhat limited but no doubt cost will drop as new methods are developed in their preparation. So long then as there is any gonadal tissue present the stimulating hormone of the pituitary should be used.

Now, if there is no functional testicular element remaining, substitution therapy with testosterone propionate is in order. It must be remembered that this hormone suppresses normal testicular development directly by inhibiting the testicular elements themselves, and indirectly by repressing pituitary stimulation. Thus caution should be exercised in using the drug testosterone propionate in young boys for such conditions as cryptorchidism. Theoretically it may cause testicular atrophy although secondary sex characteristics may develop to the extreme and testes may descend though their true function is in no way enhanced.

There are several indications for the use of testosterone propionate but it must be realized that even these are yet in the experimental stage and their ultimate value not definitely established.

In eunuchism and eunuchoidism where testicular function is absent, improvements in voice, body hair, genitalia, vigor, and sense of well being and aggressiveness are noted. Large doses, 5 to 10 mgs. daily, are necessary, and to maintain these improvements medication must be kept up through life. Sevringhaus questions the value of such treatment except for relief of social and psychological handicaps. Few patients could afford this therapy anyway.

The male climacteric occurs on the average of ten years later than that of the female. It is characterized by emotional instability, hot flushes, loss or decrease in libido, fatigue and a general slowing up. Ten to twenty-five mgs. testosterone propionate, two to three times weekly, relieve symptoms in some individuals. The dose costs from fifty cents to one dollar and a quarter each.

The treatment of prostatic hypertrophy with testosterone propionate is advocated by some but no conclusive evidence has been advanced. Some believe that urinary passage is facilitated during treatment by an increased bladder muscle tone rather than a decrease in the size of the prostate.

Testosterone propionate is being used experimentally for schizophrenia in which temporary relief is apparently afforded. At Memorial Hospital in New York this hormone has been found useful in controlling pain in cases of breast carcinoma, particularly in women of premenopausal age. Twenty-five mgs., three times weekly for three weeks, and then renewed as necessary, has given encouraging results.

Caution should be exercised in the use of testosterone propionate in women for control of menopausal syndrome or menorrhagia. Large doses over long intervals are apt to cause permanent voice changes, hair and genital growth toward irreversible masculinity.

1000 West Grace Street.

EDITOR'S NOTE: Second in a series of brief summaries of our present knowledge of a rapidly changing field of diagnosis and therapy.

MALE SEX HORMONES IN THE TREATMENT OF TESTICULAR DEFICIENCY: CASE REPORT.*

A. I. DODSON, M.D.,
Richmond, Virginia.

The internal secretion of the testicles is known to be intimately connected with the establishment of puberty in the male and with the maintenance of the normal function of the reproductive organs. Chemical substances which have these properties have been recovered from the human urine and from the testicles, the blood and the adrenals of animals. Gallagher, Peterson, Dorfman, Kenyon and Koch[1] found the average daily excretion in the urine of these substances, known as androgens, to be sixty-three to sixty-eight international units for the men studied and forty-two to fifty-six international units for the women studied. The androgenic content of the urine is decidedly diminished in elderly men and in those with acquired or congenital testicular deficiency. An excellent review of the experimental work leading to the isolation and syntheses of these extracts has been published by Vest and Howard.[2]

The potency and standardization of such substances is evaluated by their ability to repair the atrophy of the accessory sex organs in castrated animals and to promote the comb growth in the capon. For therapeutic purposes they are now produced synthetically. The most potent of these androgenic substances is testosterone propionate. McCullagh[3] reported anatomic and symptomatic improvement in cases of prepubertal hypogonadism when treated with adequate doses of testosterone propionate. There was growth of the penis and scrotum, increase in axillary and pubic hair and the tone of the voice became lower. He also noted symptomatic improvement in functional hypogonadism. Testicular deficiency in elderly males associated with irritability, impotence and melancholia was treated successfully and castrates were restored to sexual potency. Similar reports have been made by Vest and Howard,[2] Webster,[4] Day,[5] Hamilton,[6] and others.

The following case report illustrates the efficiency of androgenic therapy in a patient with congenital absence of the testicles:

A. H. B., age seventeen, white, was admitted to St. Elizabeth's Hospital on June 8, 1936, complaining of lack of normal development of his external genitalia. His personal history and physical development were otherwise normal. He was mentally alert and had recently graduated from high school.

Physical examination showed a healthy well-developed boy, five feet nine inches tall, weighing

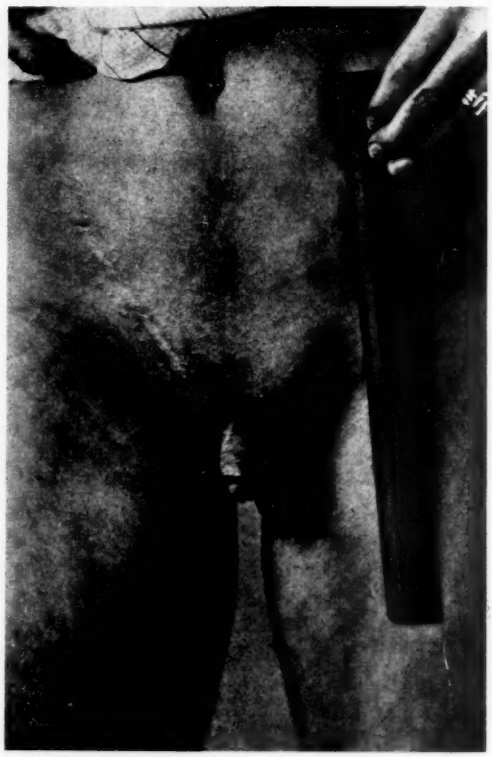

Fig. 1.--Appearance of external genitalia prior to the administration of Perandren.

132 pounds. The contour of his body was normal. His penis was that of a small child and no testicles could be found either in the scrotum or in the inguinal canals. The vasa could be felt extending to the bottom of a very small scrotum and seemed to be connected with very small epididymes. There was no evidence of axillary or pubic hair and no change had occurred in his voice.

*From the Urological Service, St. Elizabeth's Hospital, Richmond, Virginia.

On June 9, 1936, an exploratory operation was done in search of abdominal testes. An incision was made over the right inguinal canal. The right spermatic cord was normal and contained a small vas deferens. The peritoneal cavity was opened and a careful search made for abdominal testes, but none was found. Convalescence was normal and he was discharged from the hospital two weeks after operation.

During the following twelve months he was given several courses in gonadotropic therapy consisting of four hundred units of Antuitrin-S a week for eight to ten weeks with rest periods of a month to six weeks, without evidence of improvement. In October and November 1937, he was given injections of Androstine "Ciba", one ampoule every third day. After the completion of this treatment there was, for the first time, evidence of very slight improvement. There was a scant growth of pubic hair and some enlargement of the penis. (Figure 1.)

Fig. 2.—Appearance of external genitalia following adminstration of 75 milligrams of Perandren a week for twelve months.

In April, 1938, I received from Ciba Pharmaceutical Products, Incorporated, a supply of Perandren (testosterone propionate) for use in his case. He received 25 milligrams three times a week from April 15, 1938, until May 24, 1939, with the exception of about one month. Within two months after beginning treatment there was definite increase in pubic hair and there were rather frequent erections. After six months of treatment there was some growth of axillary hair and a marked increase in pubic hair and in the size of his penis. On March 22, 1939, he reported that he had had three nocturnal emissions. There was evidence of continued growth of the external genitalia and his voice had begun to change.

On January 11, 1939, X-ray pictures of the joints showed normal development except that the epiphyses were all open. Re-examination on March 22, 1939, showed that some of the epiphyses were beginning to unite.

The patient was last seen June 12, 1939. (Figure 2.) He is now seventy-two inches tall and weighs 150 pounds. His voice is still rather high pitched, but definitely masculine. He has a satisfactory growth of pubic hair and appreciable increase in the size of his external genitalia. There is no evidence of testicles in the scrotum but the epididymes have decidedly increased in size.

CONCLUSIONS

The administration of testosterone propionate 75 milligrams a week for fifty-two weeks has produced the anatomical and physiological changes of puberty in a twenty-year-old congenitally eunuchoid male.

My thanks are due Dr. E. C. Hamblen, director of the Endocrine Division of Duke University for advice and assistance in the treatment of this patient.

The Perandren (testosterone propionate) was supplied by Ciba Pharmaceutical Products, Incorporated, Summit, New Jersey.

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805 Professional Building.

DOCTORS OF YESTERYEARS IN NORTHAMPTON AND ACCOMACK COUNTIES.

MRS. MARY MACON AYLETT FITZHUGH
(MRS. WM. BULLITT FITZHUGH)
Machipongo, Virginia.

The lives of doctors are very sad as they seldom can enjoy the gayeties of life for they are always noble, self-sacrificing with the sick and dying, and if my paper gives them any pleasure tonight I shall be delighted.

Dr. George Lyon Eyre Tankard of "Sylvan Scene", Northampton County, was the oldest son of Dr. John Tankard, of Hadlock. He graduated in medicine at the University of Maryland, in Baltimore, Md., in 1825. He attended the old Margaret Academy of Pungoteague, and practiced medicine from "Sylvan Scene" until his death in 1831. Dr. Tankard's death was caused by exposure on a dark and stormy night when he rode to the bottom of Church Neck to see a patient while very sick himself, and contracted a cold from which he never recovered. His mother was Mrs. Zillah Downing.

Among his papers was found a letter dated 1821, August 2, with a list of 124 medicines at that time in use in Virginia. Among them were opium (morphine, codeine, and paregoric), mercury (calomel), quinine, iron, digitalis, and magnesium.

Dr. Philip Aylett Fitzhugh practiced from "Sylvan Scene" fifty-eight years. After graduating at the Virginia Military Institute, July 4, 1846, he entered the Medical College of Virginia at Richmond where he graduated in Medicine in 1849, and settled in Northampton County. He was born at the old Fitzhugh homestead, "Shooters' Hill," in Middlesex, Virginia, June 14, 1824. He died at "Sylvan Scene" July 7, 1908. He was descended in the third generation from Col. William Fitzhugh, of Bedford, England. His maternal grandmother was Elizabeth Aylett, third daughter of Patrick Henry, the distinguished Virginia orator and statesman. He was sent a prisoner to Fort McHenry for refusing to take the Union oath when the Federals occupied the Eastern Shore during the Civil War. When he returned they refused to allow him to practice medicine without taking the oath, which he refused the second time to do, so he practiced medicine in Northampton free of charge until the close of the war, and they were powerless to punish him again.

Dr. H. P. C. Wilson, Wilsonia Neck, Northampton County, moved to Baltimore, Maryland, and became a very celebrated physician.

Dr. John Tankard, of "Tankards' Rest", Hadlock, Northampton County, Virginia, being the oldest doctor whose name is recorded here, having been born in 1752, I thought it would not be amiss to mention a few experiences in his life. As there were no medical colleges in this country at that early day, his father sent him to William and Mary College, where the science was taught under some disadvantages.

The Revolutionary War was still going on and he was one of twenty-seven students to leave William and Mary College to enlist in the war to serve as Surgeon till its close. He was in LaFayette's Division of the American Army, and he knew him well. Dr. Tankard had the happiness, not only to witness the humiliation of Lord Cornwallis at Yorktown, but to be an actor in the scene. Dr. Tankard, desirous of being fully equipped in the profession he had chosen, decided to attend the University of Edinburgh, Scotland. Notwithstanding the poverty of the colonies at that time his father was able to furnish him the money to complete his medical course at this, the most noted University in the world. The old University of Edinburgh was chartered by James VI in 1582.

Dr. E. W. P. Downing, Sr., whose father was also a doctor, was the father in turn of Dr. Arthur Downing, of Chatham, in Northampton County, and of

Dr. Stratton Downing. Dr. Arthur Downing was graduated from the University of Pennsylvania in 1832. He died in 1905. Dr. Stratton Downing was educated at William and Mary College and graduated there in Medicine at the age of thirteen, said to have been the youngest pupil ever to graduate in Virginia. He was the father of Dr. E. W. P. Downing still active in practice at Franktown, Virginia, after fifty years. Dr. B. N. Mears, now practicing at Belle Haven, is a nephew of Dr. Stratton Downing.

Dr. John Simkins, of the "Hermitage" farm near Cape Charles, was one of the old doctors, and sold his farm to a family of Norfolk named Thomas. Mr. and Mrs. Francis Thomas still live there, and Dr. Wm. D. Williams, a prominent dentist of Cape Charles, father of Mrs. Thomas, resides with them.

Dr. Thomas F. Spady, Dr. George W. Smith, Dr. Dan Wilkins, and Dr. Wm. S. Stoakley practiced in the Capeville District some forty years ago.

Dr. Arthur G. Vaden moved from Cape Charles to Temperanceville several years ago and is still in active practice. His brother, Dr. Garland M. Vaden died in 1936.

Dr. G. Fred Floyd, Dr. Severn P. Nottingham, Dr. Wm. Lee Dalby, and Dr. Burleigh C. Kellam were the first officers of the Northampton County Medical Society on its organization January 15, 1907. Others present, entering the fraternity were Dr. Charles Smith, of Exmore; Dr. B. H. Gilmer, of Townsend P. O.; Dr. John Gates Goode, of Cheriton, and Dr. Garland Paine Moore, of Cape Charles, and probably others.

Dr. John T. Wilkins, II, was made an honorary member of the County Medical Society along with Dr. W. W. Wilkins in 1913. Dr. John T. Wilkins, Sr., died in 1908 at the age of ninety. Dr. W. W. Wilkins died at his home near Eastville in 1934.

Dr. Carlisle Nottingham practiced in Cape Charles, and Dr. T. N. Jacob at Dalbys until their deaths in 1925.

Dr. James Mortimer Lynch has been active in practice in Cape Charles since 1910.

Dr. Wm. B. Trower distinguished himself nobly during the World War and has since turned from medicine to farming.

Dr. Sidney Sheppard Ames began practice in Cape Charles in 1927.

Further up the county toward Eastville we have the names of Dr. Wm. A. Thorn, Dr. John Kerr, Sr., and Dr. George Kerr who were active as surgeons during the Civil War. Dr. George F. Wilkins, of Eastville, and Dr. Robert Taylor, of Wilsonia Neck, are mentioned at a slightly later date. Dr. Griffin W. Holland, of Eastville, is at present out-standing in local and State medical affairs. Other names about which we unfortunately have little record but serving nobly in the Eastville territory are: Dr. James McNutt, Dr. Kendall Addison, Dr. William Gilmore Smith, Dr. R. B. Carey, Dr. George Yerby, and Dr. J. E. Nottingham.

Dr. John Henderson and his son, Dr. Potter Henderson, after him, practiced at Bridgetown. Dr. Wm. Bell Trower, Sr., and Dr. Bagwell practiced at Johnstontown. Dr. James H. Mapp, of Machipongo, now practices at Buena Vista. Dr. Thomas Mapp was located at Johnstontown. Dr. E. Holland Trower at Eastville and Dr. J. Walker Jackson at Machipongo are in active practice.

In the Franktown District are listed the names of Dr. Peter Scott, Dr. J. Wm. Tankard, Dr. J. Wm. Tankard, II (grandson), of Franktown, and Dr. Wm. Brickhouse, of Belle Haven, in addition to those before mentioned. Dr. Wm. J. Sturgis, Sr., practices at Nassawadox, and his son, Dr. Wm. J. Sturgis, in Baltimore, Md. More recently come to the territory are Drs. H. L. Denoon, John R. Hamilton, W. T. Green, and W. Carey Henderson who practice at the Hospital at Nassawadox, and Dr. J. E. Gladstone who has located at Exmore.

Dr. John Littleton Harmonson, born in Northampton County in 1821, a learned physician, lived and practiced in Pungoteague. He, with Dr. Frederick Caesar Augustus Kellam, I, of Accomack County, were put in Accomack Debtor's Prison for refusing to take the Union oath.

Dr. John Robertson, now practicing in Onancock, states that his father, Dr. Edgar Robertson, likewise was imprisoned for the same cause but escaped to Cobb's Island, where he was fed by a lady, and afterwards he went to Baltimore where he got into the University of Maryland to study medicine and surgery. Dr. Edgar Robertson died about twenty years ago.

Dr. Frederick Caesar Augustas Kellam, II, Accomack County, was the first on the peninsula to use antitoxin in the treatment of diphtheria, a clinical thermometer, a hypodermic syringe, and a cold bath in the treatment of typhoid fever.

Dr. Corbin D. Fletcher, Accomack County, died while serving as surgeon in the Confederate Army in

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1865. A forebear of Dr. Corbin Fletcher was Dr. Spencer Fletcher. Dr. Frank Fletcher, a nephew of Dr. Corbin Fletcher, was father of Dr. Richard Fletcher. All have practiced in the same territory.

Dr. Peter F. Brown, Accomack County, during the Civil War, worked in several hospitals.

Dr. Thaddeus Fitzhugh, Onancock, was sent by General R. E. Lee to capture two steamers, the "Titan" stationed at Cherrystone Wharf in Northampton County, and the "Harriet Deford" up North River, both filled with provisions for the Union soldiers stationed on the Eastern Shore of Virginia. He accomplished the feat and took both steamers back to the western shore to feed starving Confederate soldiers.

Dr. John R. Bowdoin, Sr., was sent to Fort McHenry a prisoner, but was exchanged in the army as a surgeon.

Other well known physicians of Accomack County, other than those now in practice on the Eastern Shore of Virginia, were: Dr. Thomas P. Fisher, Dr. Fenwick Fisher, Dr. Wm. T. Bell, Dr. Henry Sidney Fisher, Dr. Edwin Leatherbury, Dr. Horsey, Dr. Sidney Sheppard Kellam (died 1933), Dr. Joseph E. Broadwater, Dr. Geo. W. LeCato, Dr. Wm. J. Scott, Dr. George Scarbrough, Dr. Levin Joynes, Dr. George Cropper, Dr. Fenwick Fletcher, Dr. Southey S. Satchell, Dr. John E. Mapp, Dr. John T. Bell, Dr. Charles W. Byrd, Dr. R. R. Nevitte, Dr. Marion Murdock, Dr. John W. Bowdoin, Dr. Wm. Frederick Matthews, Dr. Andrew S. Davis, Dr. J. H. Hiden, Dr. John T. B. Hyslop, Dr. C. W. Colonna, Dr. John Hack Ayers, Dr. Edgar Robertson, Sr., Dr. Fenwick Fisher, Dr. Henry Fisher, Dr. Thomas P. Fisher, Dr. John James Henry Wise, Dr. Webster P. Barnes, Dr. Victor K. Young, Dr. Willie Kerns Dix, Dr. John R. Ames, Dr. Geo. Bentley Byrd, Dr. E. T. Ames, Dr. H. H. Wescott, Dr. Turman, Dr. A. F. Wood, Dr. Ira Hurst, Dr. Harry White, and Dr. James E. Hyslop, Dr. E. E. Kellam, Dr. F. M. West, Dr. John R. Bowdoin, Dr. W. H. Coard, Dr. Thomas S. Taylor, Dr. N. S. Smith, Dr. L. T. Walton, Dr. O. B. Finney, Dr. H. S. Pitts, Dr. A. Watson, Dr. S. B. Downing, Dr. A. H. Lilliston, Dr. Fletcher Drummond, Dr. A. D. F. Ewell, Dr. E. E. Bell, Dr. John W. Kellam, and Dr. H. C. Mallory.

Still in practice in Accomack County are: Drs. Wm. F. Kellam, James C. Doughty, John W. Robertson, Rooker White, J. F. Edmonds, W. L. Cosby, J. L. DeCormis, Geo. Fosque, W. W. Kerns, Preston Dix Parks, Glen Parks, Alva Matthews, O. R. Fletcher, Charles E. Critcher, W. M. Burwell, and C. M. Easter.

If there are other names of Eastern Shore physicians which have been omitted the omission is entirely unintentional.

Sylvan Scene.

Correspondence

Formula for Ringer's Solution in Treatment of Bacillary Dysentery in Infants.

TO THE EDITOR:

A question has been raised by one of the subscribers to the MONTHLY about the possibility of a typographical error in the formula for Ringer's solution as reported in my last article. Therefore, I am giving the following explanation:

The formula for Ringer's Sol., as reported in the articles on "Treatment of Bacillary Dysentery in Infants" in May, 1937 and March, 1940, is exactly as we have used it for oral administration during the past four years. It is a hypotonic solution. In our experience it has been more effective in maintaining proper hydration when given orally than the isotonic solution, which has a much higher salt content. At the same time it seems to stimulate thirst equally as well.

E. K. Marshall, Jr., of Baltimore in the *North Carolina Medical Journal*, Vol. 1; page 127, March, 1940, makes the following statement: "Although supposed at first to be specific against hemolytic streptococcus infection, sulfanilamide (or allied drugs) has now been shown to be curative in experimental mouse infections due to meningococcus, gonococcus, E. typhi and paratyphi B., Clostridium Welchii, some strains of dysentery bacillus and a staphylococcus."

March 14, 1940. W. E. KEITER, M.D.
Kinston, N. C.

Medicine of the Past.

TO THE EDITOR:

In Chalkley's Abstracts of Augusta County Records, (vol. 2, page 258) is a portion of a Will, recorded in Amherst County. The Will is that of Dr. James Hopkins, dated June 17, 1799. It contains one item in particular which I believe would be of interest to your readers. As I have not easy access to

the Amherst County records I give the fragment recorded in Chalkley.

After other legacies etc., he makes provision . . . "To establish a hospital, patients to be poor and afflicted, one with consumption, one with the yaws or venereal disease, and one with stone in the bladder or kidney. The physician to use his best efforts to effect a cure. If he is successful, or if he is so in one instance of the three in one year, then the physician is to enjoy the occupancy of the farm and building for another year gratis, and so on from year to year; but if he is not successful in curing two of the patients in the second year, or in one of the two first years, he shall for the third year cure two patients ill of one of the said disorders (four in all) for that year; and if he fail that year to cure two out of the four then the Trustees shall have discretion to dismiss him.

"The farm hospital is to be located in Buckingham, Campbell, or Bedford County. Contributions are to be asked to enlarge the hospital, and to establish bounties for the cure of the species of deplorable disorders such as hydrophobia, and on the discovery of any useful medicine of native American plants or vegetables or if of foreign origin, etc. Trustees: Wilson Cary Nicholas, Wm. Lewis, Wm. Callaway, E. Smith, and Sam'l Calland.

"The hospital is not to be more than 12-15 miles from James River or from the town of New London. Two acres to be purchased and house built, then conveyed to John Shephard, preacher of the Gospel, Tandy Key, and Richard Breedlove members of the Methodist Society. To be called Christ Church. To be open to any other denomination."

Lexington, Va., February 24, 1940. E. P. TOMPKINS, M.D.

Miscellaneous

Group Health Service Under the Farm Security Administration.

The Farm Security Administration had medical programs worked out with physicians' groups in different parts of the State, involving nineteen counties, early enough last year so that all of these were in actual operation before or by July 1. This program is such that it is not easy to arrange with families for beginning anything of this kind in the fall months, so, during the latter months of the year, activities consisted chiefly of meeting groups of physicians for a discussion of these programs, and getting them adopted for development and actual operation during this calendar year.

The programs have actually begun to operate in February and March in Patrick, Henry and Franklin Counties. They are expected to begin operation by April 1 in the additional counties of Alleghany and Bath, Charlotte, Prince Edward, and five counties in the Peninsula, namely: New Kent, Charles City, James City, York, and Warwick.

In addition to the above named counties, there are eleven other groups in which the program has been approved and accepted by the physicians. In these eleven, the program may begin by May 1 or it might be postponed until July 1.

The following table gives the "Medical Care Summary" of the Farm Security Health Service Units in Virginia for the year 1939:

		MEDICAL CARE			HOSPITALIZATION		
Health Service Unit	Period Months	No. Persons	Bills incurred	Bills Paid	No. Pers.	Bills incurred	Bills Paid
Accomac	1-6	212	$1,084.50	$561.13	6	$210.40	$182.53
	7-12	312	1,187.50	690.91	7	165.00	131.76
Northampton	1-6	(?)	(256.50)	(178.00)	(?)	(97.25)	(60.30)
	7-12	65	299.00	199.33	3	25.00	18.60
Halifax	7-12	172	809.40	728.70	3	99.70	99.70
Shenandoah (5 Co's.)	7-12	592	1,781.93	1,146.58	No hospitalization		
Pittsylvania	7-12	180	589.65	517.62	3	114.00	55.78
Lunenburg	7-12	86	344.00	258.94	No hospitalization		
Southwest Va. (9 Co's.)	7-12	945	3,956.75	2,310.62	(?)	(864.01)	(558.24)
TOTALS		2,564	$10,052.73	$6,413.83	22	$614.10	$488.37
AVE. (for state)		366	1,436.10	916.26	3	87.73	69.77

Medical Society of Virginia
Special Meeting of Council

A special meeting of the Council was held on February 15, 1940, at 12 noon, at the Society headquarters. Dr. Trout being unable to attend because of illness, Dr. Walter B. Martin president-elect, presided. Others present were: Dr. Karl S. Blackwell, first vice-president; Drs. Julian L. Rawls, Roshier W. Miller, C. E. Martin, and John Hundley, councilors; Dr. I. C. Riggin, State Health Commissioner; Dr. Wyndham B. Blanton, editor of the MONTHLY; Dr. J. Morrison Hutcheson, chairman of the Legislation Committee; Drs. J. Powell Williams, J. K. Hall, and H. U. Stephenson; and the secretary.

Dr. Martin said the special object of this meeting was to discuss certain legislative questions but that several other matters might be disposed of first. One of these was to have the opinion of the Council as to when new officers and committeemen should take office, in view of the fact that the meeting will be held a little more than two months earlier than usual. As the Constitution provides that the term of office shall be for one year, Dr. Rawls offered a motion, which was adopted, that the Council shall meet in October and officers and committees shall hold until then.

It was stated the President of the Woman's Auxiliary had written Dr. Trout in regard to plans for their joint meeting with the West Virginia Auxiliary and it was felt they would need some financial help in putting on their program. Dr. Miller moved that $100.00, or such part as may be needed be allowed the Auxiliary to help in their expenses for this meeting.

Dr. Martin next read a letter from Dr. Trout, endorsing the work of the Legislation Committee and suggesting that the Committee be allowed an additional appropriation, up to $500.00 if necessary, for its expenses. Dr. Hutcheson had advised him that he felt it necessary to have legal advice in regard to the chiropractic bill, before the General Assembly, and he had authorized him to consult an attorney and was confident the Council would make an appropriation for this purpose. Dr. Miller moved that the action of the President be approved. Dr. Hutcheson said he had several conferences with a lawyer and secured some valuable and helpful advice. When he asked about compensation, the lawyer stipulated no fee, leaving this to Dr. Hutcheson. Personally, he felt he should be paid. Dr. Miller's motion was then seconded and adopted, and Dr. Hutcheson was given permission to use such part of the additional $500.00 appropriation as he might find necessary in his legislative work.

Dr. Hutcheson explained that the Chiropractic Bill came up in committee before doctors were aware of such legislation and he and other doctors had opposed it there, in spite of which it was passed out of committee. Then they had worked harder and had succeeded in having it re-committed from the floor of the House. He understood it would be presented in the Senate. In the discussion following, it was said a number of chiropractors had openly boasted that they are violating the law, and they should be convicted.

The question of imposing a license tax on physicians was next discussed and most of those present thought it would compromise the doctors position on other legislation to oppose the placing of such a tax at this time. As opposition to this tax had been registered by a number of doctors, however, the question was asked if doctors might be paid for signing certificates to be sent the Health Department and Bureau of Vital Statistics, as is done in some states. Dr. Riggin said there were both good and bad points to this but he did feel that opposing a license tax at this time would greatly weaken the doctors' cause. Dr. W. B. Martin said the Norfolk County Medical Society voted officially not to oppose the tax unless it were done by individuals. Dr. C. E. Martin said a number of doctors in the Fourth District were opposed to the tax, while some felt it wiser to take no action.

Dr. Stephenson was opposed to the license tax as a matter of principle, because the Society had fought it and secured exemption some years ago, but felt an annual registration might be required of doctors and a fee charged for this.

Dr. Miller moved that the Legislation Committee be instructed not to oppose the license tax bill but be requested to bring out certain facts as to work done by physicians, if necessary. This was seconded by Dr. Rawls.

Dr. Powell Williams said the Board of the Richmond Academy of Medicine was in favor of accepting the tax but a number of members had phoned and talked with him as being opposed to it.

Dr. Blackwell had heard much opposition to the tax in spite of the action of the Board.

Drs. Blanton and Riggin felt it unwise to oppose the bill but Dr. Hall was opposed to the taxation and felt if doctors submitted to this, they would have less influence than now. He did not think they had been shown any special consideration in medical matters.

Dr. Hundley felt public resentment against the medical profession had been greatly increased because they appeared to oppose everything. Personally, he did not wish to pay the tax but felt opposition would hurt. He did not think there would be any wide opposition when the situation was explained to doctors.

Dr. Miller's motion being put to vote was approved by Drs. Miller, Hundley, and Rawls, and opposed by Dr. C. E. Martin.

A letter was read by Dr. Martin, chairman, from the

Work Projects Administration representative in this State, requesting that some one be appointed by the Society to arrange for an equitable distribution among its membership of injury cases arising from W. P. A. employment. Dr. Hundley felt no one doctor would have time to give to this work and moved that the W. P. A. office should report complications to the local societies and have them pass on questions in their respective jurisdictions. This was seconded and adopted.

Before closing, Dr. Blanton told of the Governor's proposal for reorganizing the State Hospital Board, by which the Governor would have the power to appoint the director, thus being able to depose him at will. He thought the Director should be a licentiate of the Board of Licensure of the American Psychiatric Association and he should be appointed by the Governor on recommendation of the State Hospital Board, and that he should not be dismissed except on recommendation of a majority of that Board.

Following this, Dr. Rawls moved that the Legislation Committee be directed to examine the bill proposed by the Governor with regard to appointment of the Director of the State Hospital Board and suggest such changes as they think necessary, after consultation with Dr. Gayle and others of the Hospital Board. This was adopted, after which the Council adjourned.

AGNES V. EDWARDS,
Secretary.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The report of the Bureau of Communicable Diseases of the State Department of Health for February, 1940, compared with the same month in 1939, follows:

	1940	*1939*
Typhoid and Paratyphoid Fever	6	13
Diphtheria	60	70
Scarlet Fever	142	170
Measles	123	600
Meningitis	10	4
Poliomyelitis	2	4
Rocky Mountain Spotted Fever	0	0
Typhus Fever	1	1
Undulant Fever	3	1
Tularaemia	5	1

THE PREMARITAL EXAMINATION BILL

Recently the premarital examination bill, sponsored by the State Medical Society, was passed by the General Assembly and signed by the Governor. This new law becomes effective August 1, 1940, and will require that a standard serologic test be made on each applicant as a prerequisite for marriage. It further requires that these tests be made in laboratories approved by the State Health Commissioner. We quote section (d) of the Premarital Law:

> "Serological tests required by this section shall be made by the State Department of Health or by a laboratory approved for such purpose by the State Health Commissioner; serological tests used shall be such as are approved by the State Health Commissioner."

In order that city, private, and semi-private laboratories can achieve approval to participate in this program, the State Health Department last month began a serologic evaluation survey of all laboratories by invitation. It is hoped that this survey can be completed within this month and will be of assistance and value to the cooperating laboratories desiring to be approved for premarital serologic tests.

Woman's Auxiliary to the Medical Society of Virginia

President—MRS. HENRY A. LATANE, Alexandria.
President-Elect—MRS. GRIFFIN HOLLAND, Eastville.
Recording Secretary—MRS. T. N. HUNNICUTT, Newport News.
Treasurer—MRS. REUBEN F. SIMMS, Richmond.
Parliamentarian—MRS. JOSEPH BEAR, Richmond.
Chairman, Press and Publicity—MRS. HENRY M. SNEAD, Petersburg.

The Auxiliary to the Northampton-Accomac Medical Societies

Held its first regular meeting of the year at the home of Mrs. S. S. Kellam, in Cape Charles, on January 9. Mrs. J. M. Lynch, also of Cape Charles, was co-hostess. There were twenty members present, including the State President-Elect, Mrs. Griffin Holland, Sr., of Eastville.

The meeting was opened by the new president, Mrs. W. B. Trower of Cape Charles, who presented a Constitution and By-Laws, to be voted on at the next regular meeting.

Objectives for the year were presented and these included donations to the Northampton-Accomac Hospital, subscriptions to *Hygeia*, contributions to several funds, and support of the Women's Field Army for the Control of Cancer.

A suggested program of work for the coming year

and a budget were adopted, as was also a suggested entertainment for the hospital.

An invitation to dinner with the Accomac-Northampton County Societies was extended the Auxiliary and this was unanimously accepted.

There were two speakers—first, a talk on Cancer Control by Mrs. S. K. Ames of Cape Charles, and, second, a talk on Syphilis by Dr. W. Y. Garrett, County Health Officer of Northampton County.

These were followed by several musical selections by Mr. Henri Emurian, a graduate of the Westminister Choir School of Music, who is not only an artist but a composer as well.

A delightful social hour followed and was greatly enjoyed.

CATHERINE R. TROWER,
Chairman, Press and Publicity.

Petersburg Auxiliary.

The regular meeting of the Petersburg Unit of the Woman's Auxiliary to the Fourth District Medical Society was held on February 27. Mrs. W. B. McIlwaine, President, presided at the business meeting. Mrs. Louis Kolipinski was appointed chairman of the Jane Todd Crawford Memorial and Mrs. E. L. McGill chairman of the nurses' tea to be held March 26.

Representatives from various churches were present at the linen shower which followed. Mrs. H. M. Snead served as chairman, with each member of the Auxiliary working with the various churches. There was a splendid display of linens for the hospital, with a valuation of $313.60. The guest speakers were Dr. Herbert Jones and Rev. Roscoe M. White, pastor of Washington Street Methodist Church. A social hour followed with the Nurses' Alumnae serving tea.

MARTHA A. WRIGHT,
(MRS. FLETCHER J. WRIGHT, JR.)
Chairman, Press and Publicity.

Have You Made Your Reservations

For the 18th Annual Convention of the Woman's Auxiliary to the American Medical Association which will be held in New York City, June 10-14, 1940? The headquarters are at the Hotel Pennsylvania and we are sure you will not want to miss this convention which promises to be an outstanding one. Mail your reservation today to Dr. Peter Irving, Housing Bureau, Room 1036, 233 Broadway, New York City.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Abbott Laboratories.
- Tablets Barbital—Abbott, 5 grains.
- Capsules Estriol—Abbott, 0.24 mg.

Gilliland Laboratories, Inc.
- Antipneumococcic Rabbit Serum, Type I.
- Antipneumococcic Rabbit Serum, Type II.
- Antipneumococcic Rabbit Serum, Type V.
- Antipneumococcic Rabbit Serum, Type VII.
- Antipneumococcic Rabibt Serum, Type VIII.

Eli Lilly & Co.
- Pulvules Sulfanilamide, 0.13 Gm. (2 grains).
- Pulvules Sulfanilamide, 0.325 Gm. (5 grains).

Parke, Davis & Co.
- Tablets Sulfapyridine—P. D. & Co., 0.5 Gm. (7.7 grains).
- Bismuth Salicylate in Oil—P. D. & Co., 30 cc. bottle.
- Bismuth Salicylate in Oil—P. D. & Co., 500 cc. bottle.

E. R. Squibb & Sons.
- Antipneumococcic Rabbit Serum, Type I.

The Upjohn Co.
- Amopules Sodium Cacodylate—Upjohn, 0.05 Gm. (¾ grain), 1 cc.
- Ampoules Sodium Cacodylate—Upjohn, 0.1 Gm. (1½ grains), 1 cc.
- Ampoules Sodium Cacodylate—Upjohn, 0.2 Gm. (3 grains), 1 cc.
- Ampoules Sodium Cacodylate—Upjohn, 0.32 Gm. (5 grains), 1 cc.
- Amopules Sodium Cacodylate—Upjohn, 0.45 Gm. (7 grains), 1 cc.
- Ampoules Sodium Cacodylate—Upjohn, 0.97 Gm. (15 grains), 2 cc.

New and Nonofficial Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Mixed Grass Concentrated Pollen Extract—Abbott (Blue Grass, Timothy, Orchard Grass, Red Top, and Sweet Vernal Grass in equal parts). Abbott Laboratories, North Chicago, Ill.

Propaganda for Reform

Lipoid Pneumonia.—While the use of unsaponifiable oils, especially for nasal inhalation, have been known to cause irritation of the lungs, yet recent reports emphasize the increasing danger of these substances as the cause of lipoid pneumonia. The chief ingredient in these preparations is generally light liquid petrolatum, frequently used in "nose sprays" and "nose drops." The subject is

extensively discussed in this editorial. (J.A.M.A., Jan. 20, 1940, p. 252.)

Vitamin P.—In 1936 Szent Györgi and his collaborators established the presence in extracts of Hungarian red papper and later in lemon juice of substances other than ascorbic acid which could control the hemorrhage that occurs in the course of a variety of conditions. Ascorbic acid, even in excess, was ineffective. Later it was reported from the same laboratory that fractionation of the curative extracts had demonstrated that the active substance was present in a fraction consisting of practically pure flavone or flavone glucoside. The name vitamin P was given to the substance responsible for the action on vascular permeability. The flavones should not be confused with the flavins, one of which, in combination with carbohydrate, is vitamin B_2. The claim for the vitamin-like nature of the flavones appeared to be supported by the experimental demonstration in guinea pigs of an increased survival time in animals on a scorbutic diet that received supplements of vitamin P concentrates. There were fewer hemorrhages present at necropsy in the treated animals than in control guinea pigs that received the unsupplemented diet. However, efforts to confirm these data in experimental animals yielded conflicting results. Further clinical data are now available in the recent experiments of Scarborough. The patients used in this investigation all had abnormally increased capillary fragility, which appeared to be definitely related to a dietary deficiency. The degree of capillary fragility was established for each case and the diet then adjusted to contain supplements of either fresh fruit, a mixture of vitamins A (oral), B_1 (parenteral), C (oral) and D (oral), a crude flavone fraction from orange juice, a purified flavone preparation, or a solution of flavones prepared from orange peel according to the method of Szent-Györgi. A definite increase in the resistance of capillary walls to the application of pressure (both negative pressure, suction and positive pressure tests were employed) was obtained only in those instances in which the flavone-containing extracts were employed. The administration of ascorbic acid by mouth or by injection failed to produce this beneficial effect. The experiments of Scarborough appear to establish more definitely the possible existence of a dietary factor that is essential for the maintenance of capillary resistance. (J.A.M.A., Jan. 6, 1940, p. 43.)

Acceptance of Sunlamps.—After extensive investigation and inquiry, the Council on Physical Therapy has adopted and, until a more practical procedure is proposed, will use the erythemal reaction as a basis for judging the effectiveness of ultraviolet lamps for two important reasons: (1) In the case of exposure to intense sources of ultraviolet radiation it is a simple and practical means of preventing severe burns, and (2) in the case of weak sources of ultraviolet radiation it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation. The chief difference between sunlamps and therapeutic lamps is that the spectral radiation characteristics of acceptable sunlamps are such that they are suitable for home use without the supervision of a physician, whereas therapeutic lamps have spectral emission characteristics which necessitate professional supervision or control to avoid hazards of over-exposure. In accepting sunlamps, the Council requires physical evidence of their production of energy from 2,800 to 3,200 angstroms in wavelength at an intensity sufficient to produce a minimum perceptible erythema on the average untanned skin in not more than sixty minutes at a minimum acceptable operating distance of twenty-four inches. It has been demonstrated both clinically and experimentally that adequate ultraviolet energy betwen 2,800 and 3,200 angstroms plays an important role in deposition of calcium and may prevent rickets and may be an effective aid in promoting the soundness of bones and teeth. There is no warrant for the claim, however, that ultraviolet rays will insure normal tooth structure or that ultraviolet rays will prevent dental caries. Direct exposure of the skin to ultraviolet rays from the sun or from artificial sources results in the formation of vitamin D within the organism but the Council cannot recognize statements or implications that vitamin D has all the beneficial effects of exposure to sunshine. Advertising claims for sunlamps containing statements that exposure to ultraviolet radiation increases or improves the tone of tissues of the body as a whole, stimulates metabolism, acts as a tonic, increases mental activity or tends to prevent colds are not acceptable to the Council. (J.A.M.A., Jan. 27, 1940, p. 325.)

Book Announcements

Men Past Forty.

In the month of December, 1938, there appeared in the VIRGINIA MEDICAL MONTHLY a review of the book "Men Past Forty" written by A. F. Niemoeller.

Following my superficial review of the book, I made a detailed examination on the basis of which I am recalling my review as then published.

R. W. MILLER.

Diseases of the Skin. By RICHARD L. SUTTON, M.D., Sc.D., LL.D., F.R.S. (Edin.), Professor of Dermatology, University of Kansas, School of Medicine. And RICHARD L. SUTTON, JR., A.M., M.D., L.R.C.P. (Edin.), Associate in Dermatology, University of Kansas, School of Medicine. Tenth Edition. Revised, Enlarged and Reset. St. Louis. The C. V. Mosby Company. 1939. Octavo of xiv-1,549 pages. With 1,542 Text Illustrations and 21 Color Plates. Cloth. Price, $15.00.

The new edition (tenth) of this standard work in dermatology has been completely revised.

In this edition a short chapter is devoted to embryology, and the chapter on physiology has been expanded.

Anaphylaxis and allergy have been brought up to date. The allergic diseases in so far as they are re-

lated to the skin are defined. The various types of skin tests and their significance are considered. The Schwartzmann phenomena is invoked as a possible explanation of Andrews' pustular bacterids. There is an abbreviated diet list.

Under general treatment there is a good discussion of the drugs used in dermatology, especially the antisyphilitic remedies. X-ray therapy and hyperpyrexia receive brief mention.

There is a thought provoking review of dermatitis venenata (contact dermatitis). Burns of the scalp following "permanent waves" are mentioned.

The metabolic diseases are amply commented on in the light of newer knowledge. The etiology and treatment of acne vulgaris is considered at length.

The keratoses and carcinomas are treated rather fully. We feel that not every one will agree with authors' conception of the origin of cutaneous malignancies. The authors voice their objections to the application of the word precancerous to senile keratosis; they regard them as epidermal neoplasms with various rates of growth. The clinical descriptions of these conditions are good.

The authors suggest that sulfanilamide may become the drug of choice in the treatment of erysipelas. They favor the conservative treatment of furuncles.

The diseases due to fungi are well described. An excellent dissertation on moniliasis is included.

Diseases of the nails is the outstanding section under diseases of the appendages.

This textbook is one of the best to appear in recent years. The clinical descriptions are good, and the book is replete with many excellent illustrations. There are a good number of colored plates. Treatment receives special attention. The authors are frank in expressing their own views. They supply the reader with a detailed bibliography on all subjects, especially the controversial ones. This book has a definite place in the library of the general practitioner as well as the specialist.

ALLEN PEPPLE, M.D.

Shock. Blood Studies as a Guide to Therapy. By JOHN SCUDDER, M.D., Med.Sc.D., F.A.C.S., From the Surgical Pathology Laboratory of the College of Physicians and Surgeons, Columbia University, and the Department of Surgery, the Presbyterian Hospital, New York. Philadelphia. J. B. Lippincott Company. 1940. Octavo of xvii-315 pages. 55 Illustrations, Five Plates, Three of Which are in Color. Cloth. Price, $5.50.

Reviewed editorially in this issue of the MONTHLY.

Fractures. By PAUL B. MAGNUSON, M.D., F.A.C.S., Associate Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Passavant Memorial Hospital and Wesley Memorial Hospital, Chicago. Third Edition, Revised and Enlarged. Philadelphia. J. B. Lippincott Company. Octavo of xxii-511 pages. 317 Illustrations. Cloth. Price, $5.00.

This is a 500-page book in its third edition, sent to press in September, 1939.

The book presents the subject of fractures in a way that is desired by two groups of practitioners. For those wishing to develop great skill in treatment of fractures it gives in detail the fundamentals of fracture pathology and treatment which are hard to find in most books and it therefore gives an excellent foundation to be followed by a more thorough study. For the practitioner wishing to treat his simple fractures and to understand the more difficult ones the subject is presented in the best possible manner. It would appear that all those interested in fractures would find the information in this book very sound and of great value.

The book is splendidly planned and the material presented excellently so that the information contained is easy to find for reference purposes or easy to acquire by continuous reading.

This book can be unhesitatingly recommended.

THOMAS BEATH, M.D.

Outline of Roentgen Diagnosis. An Orientation in the Basic Principles of Diagnosis by the Roentgen Method. By LEO G. RIGLER, B.S., M.B., M.D., Professor of Radiology, University of Minnesota, Minneapolis, Minnesota. Atlas Edition. 254 Illustrations Shown in 227 Figures, Presented in Drawings and Reproductions of Roentgenograms. Philadelphia. J. B. Lippincott Company. Octavo of vii-212 pages, in addition to Pictorial Atlas. Cloth. Price, $6.50. This book may also be obtained in a Student's Edition, from whch the Atlas of Roentgenology has been omitted but to which all figure references have been retained in the text. Paper cover. Price, $3.00.

The outline is a very clear presentation of the fundamentals of roentgen diagnosis. The atlas contains excellent illustrations of common pathologic conditions demonstrated by the roentgen method. From the standpoint of teaching, one might question the amount of this material which the student might absorb from this sort of presentation. As a reference for students, it seems commendable. As a reference for radiologists, it is too elementary. It is probably one of the better text books for undergraduate medical students, but its final value would depend on the course in radiology which it supplements.

F. B. M.

Virginia Medical Monthly

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WYNDHAM B. BLANTON, M. D., *Editor*
AGNES V. EDWARDS, Richmond, *Business Manager*

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This journal is not responsible for the opinions and statements of its contributors.
All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.
Subscription Price: $2.00 per annum in advance. Single Copies 25c.

VOL. 67. APRIL, 1940. No. 4.

Editorial

The Future of American Hospitals.

Nearly every plan to improve hospital service in this country that has been advanced by persons outside the ranks of the A. M. A. has included provisions for the radical extension of such service. The original report of the so-called "Technical Committee" advised the expenditure over a period of ten years of more than a billion dollars for hospital construction, designed to increase the nation's hospital facilities by 360,000 beds. More conservatively, President Roosevelt has recently proposed one hundred $100,000 hospitals to be erected at government expense in communities where need exists, and Senator Wagner has included in a new bill before the Senate an appropriation of $10,000,000 for this purpose. The present Wagner Bill appears to be much more specific than the much criticized measure which was before the last Congress. It would put the responsibility of locating and supervising these hospitals upon the United States Public Health Service, assisted by an advisory board. On the face of it, it seems a modest enough beginning with few objectionable features.

The A. M. A. has until now maintained that what was needed was not more hospital beds but the filling of the existing empty beds, many sick people at present being unable to afford hospitalization. The answer to this part of the question is almost at hand. Hospital insurance with its 4,500,000 enrollment is rapidly expanding. Institutions which formerly worried over unoccupied beds can now in many instances barely accommodate those applying for admission. If hospital insurance continues to spread, an acute deficiency in hospital beds is a contingency that will soon have to be faced. Obviously the 100 small hospitals planned by the government will not meet this need.

The measure before Congress may well prove an entering wedge to Government management of our hospitals on a much wider basis than the present Wagner Bill suggests. Against such an eventuality it is possible to conserve hospitals beds by recasting the rules under which the insured now sometimes are unnecessarily admitted to hospitals. It may prove wise for local communities to canvass the possibility of expanding their own hospital facilities, independent of government aid. It would seem safer to adopt the latter alternative.

Canned Blood.

In view of two recent references in these columns to the use of stored blood for the purposes of transfusion, an article by Scudder, Corcoran and Drew (*Surgery, Gynecology and Obstetrics*, January, 1940) is of interest. It appears that whereas stored blood may prove extremely useful at times, the fact must not be lost sight of that fresh blood is better and that real danger may lurk in the preserved pool.

XUM

Keeping qualities may be improved by care to completely fill containers, thus minimizing agitation; by preservation in flasks so shaped that they reduce greatly the inter surface between plasma and cells; and possibly by storage in an atmosphere rich in CO_2. Up to the present time, even by these methods, a slow distintegration has not been prevented, a disintegration in which all the cellular elements as well as the prothrombin and blood sugar share. Increasing concentration of the potassium, ammonia, phosphorus, and haemoglobin of the plasma associated with a fall in H-ion concentration bespeak changes which may prove dangerous to recipients of such blood. It would appear especially hazardous, for example, to give a transfusion of pooled blood high in potassium to a patient in shock whose own blood is already overladen with the same element.

New Light on Shock.

John Scudder's book on SHOCK (J. B. Lippincott and Co., 1940) is a thought-provoking monograph which would repay every surgeon's reading. The author has indefatigably pursued his problem in the wards of the Presbyterian Hospital, New York City, and has developed methods and a critique of definite therapeutic value. The claim of a 52 per cent survival rate in otherwise moribund patients who had failed to respond to such usual procedures as transfusion, oxygen and saline, deserves more than passing notice.

This investigator, while recognizing the value of blood pressure determinations in the diagnosis of surgical shock, believes that venous pressure and the specific gravity of a drop of peripheral blood will foretell hours earlier the advent of vasoconstriction and hemoconcentration. While still advocating erythrocyte counts and hemoglobin estimations, he believes the determination of the specific gravity of the blood is a superior method of diagnosis. He lays stress upon the value of cell volume and plasma proteins. Special emphasis is placed upon the concentration of plasma potassium, the chief base in intracellular water (sodium being the chief base of extracellular water) which is liberated in shock and which as a hyperpotassemia has its effect upon the nervous system and heart muscle, and serves as a valuable index of the degree of cellular injury in shock. In the experience of the author, potassium values increased as much as 100 per cent were universally fatal.

The author, upon the basis of wide experience and experimentation, concludes that heat, the administration of adequate fluids and the control of pain are still of great importance in the relief of vasoconstriction. While transfusions are still indicated, the combined use of them with salt solution will give better results. The use of cortical extract (Eschatin) is advocated in cases of hypopotassemia, but not in cases in which there is a low concentration of the potassium ion.

This monograph brings out the importance of preliminary study and the careful evaluation of physiological factors in cases of shock due to surgery, hemorrhage, burns, intestinal obstruction and acute pancreatitis, and emphasizes the importance of delaying operation until more normal values for cell volume, specific gravity and plasma proteins indicate the control of dehydration.

Department of Clinical and Medical Education
of the
Medical Society of Virginia

Postgraduate Courses.

During the late winter two short courses have been conducted in Internal Medicine and Surgery at Alexandria and Newport News. The complete programs and speakers are as follows:

ALEXANDRIA

MANAGEMENT OF HEAD INJURIES—Dr. J. M. Meredith, University of Virginia.

PREVENTION OF ABDOMINAL ADHESIONS WITH HEPARIN—Dr. Edwin P. Lehman, University of Virginia.

TOXEMIAS OF PREGNANCY—Dr. M. P. Rucker, Richmond.

NEWER PHASES OF PNEUMONIA TREATMENT—Dr. Harry Walker, Medical College of Virginia.

THE NEWER ASPECTS OF HEMATOLOGY—Dr. J. Hamilton Scherer, Medical College of Virginia.

STERILITY—Dr. Howard F. Kane, Washington, D. C.

NEWPORT NEWS

CLINICAL CLASSIFICATION OF RENAL DISEASE—Dr. William B. Porter, Medical College of Virginia.

SOME OBSERVATIONS ON THE CLINICAL EMPLOYMENT OF THE NEWER ENDOCRINE PREPARATIONS—Dr. Edwin C. Hamblen, Duke University.

UROLOGICAL PROBLEMS IN CHILDREN—Dr. E. W. Kirby, University of Virginia.

HEADACHE AS A SYMPTOM OF NEURO-SURGICAL DISEASE—Dr. C. C. Coleman, Medical College of Virginia.

CLINICAL ACIDOSIS, ALKALOSIS, AND DEHYDRATION—Dr. H. B. Mulholland, University of Virginia.

MANAGEMENT OF GALL-BLADDER DISEASE—Dr. Staige D. Blackford, University of Virginia.

University of Virginia Twenty-Fifth Postgraduate Clinic.

The full program of the spring clinic to be held in Charlottesville on April 5 and 6 follows. It will be noted that speakers of national prominence have been obtained for this program. It is proper also to call attention to the first of the James Carroll Flippin Memorial Lectures to be delivered by Dr. William James of Panama.

THE PRESENT STATUS OF INFLUENZA RESEARCH—Dr. John William Oliphant, Passed Assistant Surgeon, U. S. Public Health Service.

TULAREMIA—Dr. Edward Francis, Medical Director, U. S. Public Health Service.

AMEBIASIS—Dr. William McCully James, The Herrick Clinic, Panama, R. P.

CLINICAL DEMONSTRATION OF ELECTROENCEPHALOGRAPHY (also tracings will be made on visitors, if desired).

The James Carroll Flippin Memorial Lecture: OBSERVATIONS OF MALARIA—Dr. William McCully James, University of Virginia Medical Department, 1906.

UNDULANT FEVER—Dr. Albert Victor Hardy, Assistant Professor of Epidemiology, Columbia University.

SYPHILIS—Dr. Joseph Earle Moore, Baltimore, Md.

THE RICKETTSIAL DISEASES—Dr. Rolla Eugene Dyer, Senior Surgeon, U. S. Public Health Service.

Program for Medical College of Virginia Spring Clinic.

The Board of Visitors, the President, and the Faculty of the Medical College of Virginia cordially invite you to attend the eleventh annual Stuart McGuire Lecture series, with which the spring postgraduate clinics have been combined for 1940.

The McGuire lectures will be given by Dr. C. Frederic Fluhmann of Stanford University, California.

PROGRAM

(In cooperation with the Department of Clinical and Medical Education, Medical Society of Virginia.)

Tuesday, April 16

8:30 P.M. Stuart McGuire Lecture, "ANAESTHESIA AND ANALGESIA IN OBSTETRICS"—Dr. C. Frederic Fluhmann, Associate Professor of Obstetrics, Stanford University.

Wednesday, April 17

10:00 A.M. THE TREATMENT OF THE TOXEMIAS OF PREGNANCY—Dr. Louis H. Douglass, Professor of Obstetrics, University of Maryland.

11:00 A.M. THE PARTIAL OR COMPLETE SEPARATION OF THE PLACENTA IN TOXEMIA PATIENTS—Dr. Bayard L. Carter, Professor of Obstetrics and Gynecology, Duke University.
Movie: REPAIR OF VESICO-VAGINAL FISTULAS.

1:15 P.M. Luncheon.

2:00 P.M. THE INCIDENCE OF HYPERTENSION FOLLOWING THE TOXEMIAS OF LATE PREGNANCY—Dr. T. J. Williams, Professor of Obstetrics and Gynecology, University of Virginia.

3:00 P.M. THE CAUSES OF DEATH IN TOXEMIAS OF PREGNANCY—Dr. Nicholas J. Eastman, Professor of Obstetrics, Johns Hopkins University.

4:00 P.M. ROUND TABLE DISCUSSION.

8:30 P.M. Stuart McGuire Lecture, "THE PROBLEM OF ABNORMAL UTERINE BLEEDING"—Dr. C. Frederic Fluhmann, Associate Professor of Obstetrics, Stanford University.

The lectures and clinics will be held in the Simon Baruch Auditorium.

Summer Short Course.

The Department of Internal Medicine of the University of Virginia Hospital, in conjunction with the Department of Clinical and Medical Education of the Medical Society of Virginia plans to offer a course on "The Recent Advances in Internal Medicine" at the University of Virginia Medical School and Hospital from June 17 through June 22, 1940. A registration fee of $15.00 will be charged and the enrollment will be limited to about twenty physicians in order to allow ward work.

This is the first time this course has been offered. If you have any suggestions to make regarding its content or if you are interested in receiving further details when plans are more definite, you are requested to write to Dr. S. D. Blackford, P. O. Box 1174, University Station, Charlottesville, Virginia, *before April 15, 1940.*

The Executive Secretary will be glad to furnish further information about any of the services of the Department and to assist in the organization of special courses for local societies.

G. B. ZEHMER,
Executive Secretary.

Proceedings of Societies

The Virginia State Board of Medical Examiners.

At the December meeting of the Board, the following doctors were licensed to practice medicine in Virginia:

Dr. Russell A. Anthony, University.
Dr. John N. Andrews, Takoma Park, Md.
Dr. Edward Phelps Ambrose, Jr., Christiansburg.
Dr. Edward Randolph Archer, Washington, D. C.
Dr. Webster William Bennett, Washington, D. C.
Dr. Ben Lynn Boynton, Norfolk.
Dr. Harry Brick, Richmond.
Dr. John F. Cadden, Jr., Roanoke.
Dr. Theodore Elias Corprew, Washington, D. C.
Dr. Philip Robert Cronlund, Jonesville.
Dr. Samuel C. DeLaura, Norfolk.
Dr. Sandidge Evans, McClure.
Dr. Harry Birch Franchere, North Alexandria.
Dr. Eugene Miles Fusco, Grundy.
Dr. Robert McCulley Halbach, Roanoke.
Dr. Thomas Hamilton Hogshead, Staunton.
Dr. Chester Frederick Hogan, Richlands.
Dr. Charles Amos Holley, Washington, D. C.
Dr. Eugene Markley Landis, University.
Dr. Norbert N. Linder, Clifton Forge.
Dr. Ralph Meredith McComas, Dahlgren.
Dr. Heinz Meyer, Konnarock.
Dr. Edith Irene Miller, Petersburg.
Dr. Leland Conner Moss, Washington, D. C.
Dr. Arthur Nachlas, Washington, D. C.
Dr. Samuel Irving Nichols, Seco, Ky.
Dr. James Harold Nickens, Washington, D. C.
Dr. Samuel M. Novak, Alexandria.
Dr. Bernard Eugene Paletz, Richmond.
Dr. Alvin F. Robinson, McLean.
Dr. Alfred Robert Stork, Norton.
Dr. De Villo Otis Todd, Tafford, Pa.
Dr. David J. Van Landingham, Patterson.
Dr. J. Ogle Warfield, Washington, D. C.
Dr. Frank Anthony Zack, Newport News.
Dr. Francis Buerk Zimmerman, Dunbar.

Norfolk County Medical Society.

Because of a change in By-Laws, Dr. Lockburn B. Scott, secretary, advises that Dr. D. Lee Hirschler, vice-president, has succeeded Dr. Harvie S. Baker, deceased, as president of this Society, and Dr. James W. Anderson continues as president-elect instead of taking office at this time, as first thought would be the case.

Dr. I. S. Ravdin, Harrison Professor of Surgery at the University of Pennsylvania, Philadelphia, was guest speaker before the Society on March 18, his subject being "Gallbladder Disease".

At the meeting on March 25, Dr. Richard B. Nicholls presented a paper on "Obstetric Complications and Sterility" and Dr. C. J. Andrews gave a paper on "Management of the Third Stage of Labor, with Description of a New Technic for Delivery of the Placenta".

It is announced that the Society's Annual Spring Clinic will be held in April as usual.

Southwestern Virginia Medical Society.

The annual spring meeting of this Society will be held in Radford, April 17.

Dr. I. A. Bigger, Professor of Surgery, and Dr. W. B. Porter, Professor of Medicine of the Medical College of Virginia, will conduct a joint round table discussion on "Infections—General and Local—From the Surgical and Medical Aspects". This program will begin at 1:30 P. M.

Members of the Society will be the dinner guests of Saint Albans Sanatorium at 6:30, following which Dr. H. W. Bachman, Bristol, will present a paper on "Fibroma of the Thyroid Gland".

The guest speaker for the evening will be Dr. Walter C. Alvarez, Professor of Medicine, University of Minnesota (Mayo Foundation), Rochester. His subject is "Hints in the Treatment of Indigestion".

Drs. Porters and Bigger are well known throughout Southwestern Virginia. Dr. Alvarez is a national authority on gastro-intestinal diseases. Aside from his connection with the Mayo Clinic, he is past president of the American Gastro-Enterological Association, Editor of *The American Journal of Digestive Diseases,* and author of many books and articles on digestive diseases.

JAMES P. KING,
Secretary-Treasurer.

Lynchburg Academy of Medicine.

The Academy held its regular meeting February 5, in the Elks' Club with the President, Dr. E. G. Scott, presiding.

The Secretary was instructed to write Representative Woodrum opposing President Roosevelt's recommendation for the building of hospitals in

under-privileged areas on the basis that the erection of hospitals is a small item as compared to the maintainance and upkeep which would always remain a burden on the tax payer besides opening a new avenue for Federal management and control, with the paralyzing effect of bureaucratic management, the wasting of funds, and the regimentation of physicians with the loss of initiative.

A written report for Prepaid Medical Care was offered by Dr. James Gorman and a special meeting called for its complete discussion with the Industrial Group.

Dr. Holcombe Hurt announced the Health and Accident Insurance carried by the Provident Life and Accident Insurance Company of Chattanooga, Tenn., is now in effect.

Dr. Gorman in a most thorough, timely and well written paper discussed "Some Observations in Otolaryngology of Help to the General Practitioner", with special emphasis on proper local applications and the harm that might follow many of the better advertised remedies. This complete work was well received and generally discussed by Drs. Tompkins, Morrison, Echols and Patterson. Dr. Gorman answered many questions in closing.

Dr. W. F. Thornton presented an interesting movie on Pathology of Breast Tumor.

Dr. Scott also presided at the regular meeting on March 4.

Mr. W. T. Spencer, Jr., Commonwealth Attorney, presented a very interesting and practical paper on "Doctors in Court."

In response to question discussed at the meeting of the Council of the State Society, the Academy was in favor of having colored physicians attend the scientific programs, provided such arrangements could be made.

It was decided to continue the Health Broadcasts, but to make them weekly instead of bi-weekly, and also to give the doctors the option of writing their own papers or using those written by the State Public Health Board.

C. E. KEEFER,
Secretary-Treasurer.

The Roanoke Academy of Medicine

Held its regular meeting on March 4, at which time the following scientific program was presented:

Treatment of Serious Staphylococcic Infections with Sulfapyridine and Its Sodium Salts by Dr. Walter B. Martin, guest of Norfolk.

The Roentgen Diagnosis of Gastro-Intestinal Hemorrhage by Dr. W. Allen Barker, Roanoke.

News Notes

The White Sulphur Meeting.

Much interest has been manifested by members and plans are well under way for the joint meeting of the Medical Society of Virginia and the West Virginia State Medical Association at White Sulphur Springs, W. Va., July 29, 30 and 31.

In the arrangement of the scientific program, the program committees from the two societies decided to have all papers presented by guest speakers, there to be three at each morning session, with a member from each Society to give a short discussion. The afternoons will be given over to round table discussions, the guests at the morning sessions to conduct these. In addition, there will be two orations—one on Medicine by Dr. Paul Dudley White of Boston, and one on Surgery by Dr. Irvin Abell of Louisville. The following have accepted invitations to speak at the morning sessions:

Dr. Harvey B. Stone of Baltimore on surgery;
Dr. Walter Alvarez of Rochester, Minn., on internal medicine;
Dr. Ross Golden of New York City on radiology;
Dr. Ralph M. Tyson of Philadelphia on pediatrics;
Dr. Wesley C. Bowers of New York City on eye, ear, nose and throat;
Dr. A. I. Folsom of Dallas on urology;
Dr. George E. Bennett of Baltimore on orthopedic surgery;
Dr. Karl M. Bowman of New York City on neuropsychiatry; and
Dr. Frederick C. Irving of Boston on obstetrics and gynecology.

Old friends among commercial exhibitors will be with us again this year and there will also be a number of scientific exhibits. Golf and other diver-

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sions may be enjoyed, a golf tournament having been arranged for Sunday afternoon just prior to the meeting. A banquet at which it is hoped the Governors of both States may be present will close the meeting.

There will be ample accommodations but reservations should be made in advance if possible.

Mark dates of this meeting on your calendar, that they may be included in your summer vacation. The latter part of July will be an ideal time of the year for a visit to the Greenbrier at White Sulphur Springs.

Academy of Physical Medicine

Is to hold its scientific session in Richmond April 24 to 27, inclusive, under the presidency of Dr. Harold D. Corbusier of Plainfield, N. J. Headquarters will be John Marshall Hotel and Dr. Thomas Wheeldon is chairman of the Committee of Arrangements. The program had not been completed at the time of our going to press, but it is understood there will be clinics as well as scientific papers. The time selected will be during Garden Week so as to give visiting ladies an opportunity to visit many of the lovely gardens in this section.

Information about the program may be secured from Dr. Wheeldon, 318 West Franklin Street, Richmond, or from Dr. William D. McFee, chairman of the Program Committee, 41 Bay State Road, Boston, Mass.

All members of the Medical Society of Virginia are cordially invited to attend the various sessions.

American Proctologic Society.

The annual meeting of this Society is to be in Richmond, June 9, 10 and 11, with headquarters at Jefferson Hotel. Dr. Martin S. Kleckner of Allentown, Pa., is president and Dr. Curtice Rosser of Dallas, Texas, secretary. Scientific sessions will be held on Monday morning and afternoon and Tuesday morning. On Tuesday, the members and visitors will be guests of the Medical College of Virginia for lunch, following which there will be a round table discussion.

The local committee in charge is composed of Drs. E. H. and Robert V. Terrell and Dr. W. W. Rixey. Pleasant entertainment is also being arranged for the visiting ladies by a committee composed of the wives of the doctors' committee and Mrs. Austen Sydnor and Mrs. Stuart Cooke, Jr.

Mental Hygiene Program at Virginia Conference of Social Work.

During the meeting of the Virginia Conference of Social Work in Roanoke, April 16-19, the Mental Hygiene Society of Virginia is sponsoring the following program to be given on the 19th at Hotel Roanoke, under the chairmanship of Dr. Howard R. Masters of Richmond:

9:30 A. M.

TREATMENT IN STATE HOSPITALS:

1. Intra- and Extra-Mural Clinics—Dr. J. E. Barrett, Marion.
2. Social Welfare Activities—Miss Hester Crutcher, Director Social Work, N. Y. Department Mental Hygiene.
3. Occupational Therapy—Miss Mary Junkin, Occupational Therapist, Richmond.

2:00 P. M.

MENTAL HYGIENE IN THE COMMUNITY:

1. The General Practitioner Looks at Mental Hygiene —Dr. F. P. Fletcher, Richmond.
2. The Pediatrician Looks at Mental Hygiene—Dr. Basil B. Jones, Richmond.

ROUND TABLE DISCUSSION: Dr. Howard R. Masters, Moderator.

6:30 P. M.

MENTAL HYGIENE SECTION DINNER AT HOTEL ROANOKE.

The Tri-State Medical Association

Of the Carolinas and Virginia held its annual meeting in Richmond, February 26 and 27, under the presidency of Dr. A. E. Baker, Charleston, S. C. Dr. C. J. Andrews, Norfolk, succeeded to the presidency, and the following officers were elected: president-elect, Dr. A. G. Brenizer, Charlotte, N. C.; vice-presidents, Dr. R. B. Davis, Greensboro, N. C., Dr. J. W. Davis, Jr., Lynchburg, and Dr. G. R. Wilkinson, Greenville, S. C.; and secretary-treasurer, Dr. J. M. Northington (re-elected) Charlotte, N. C. Drs. J. R. Young, Anderson, S. C.; R. P. Morehead, Wake Forest, N. C.; and O. B. Darden, Richmond; were named to fill vacancies on the council.

The 1941 meeting will be held in North Carolina.

The Southeastern Surgical Congress,

Meeting in Birmingham, March 11-13, installed Dr. Irvin Abell of Louisville as president, succeeding Dr. R. L. Sanders of Memphis, and selected Richmond as the 1941 convention city. Dr. Julian L. Rawls of Norfolk was named president-elect to take office in Richmond.

Married.

Dr. Morgan Burgess Raiford of Franklin and Miss Beulah Mason Daves of Goochland County, March 16.

Dr. Richard Williamson Fowlkes of Richmond and Mrs. Ferebee Fenner Cooper of Henderson, N. C., March 1.

Dr. William Parker Terry, class of '38, Medical College of Virginia, and Miss Florence Mahone of Richmond, February 24. Dr. Terry is now located at Lawrenceville, where he is Assistant Health Officer of the Brunswick, Greensville-Mecklenburg Health District.

Medical College of Virginia News.

Dr. John E. Gurley of San Francisco spoke to the faculty and student body on March 8. His subject was *Dentistry in a Scientific Era.* The talk was sponsored by Psi Omega fraternity of the dental school.

Phi Beta Pi medical fraternity brought Dr. L. B. Arey of Northwestern University to the college on March 16 to give the initial lecture of a lectureship recently established here by this fraternity. Dr. Arey's subject was *Wound Healing.*

A grant of $1,000.00 has been received from the Carnegie Corporation for the continuation of an artist in residence. This brings the total gifts and grants for the current session to $185,737.00.

Dr. Harvey B. Haag, professor of pharmacology; Dr. Rolland J. Main, associate professor of physiology, Dr. Ernst Fischer, associate professor of physiology; Dr. Paul Larson, Dr. Clair R. Spealman, and Dr. E. I. Evans, instructors in physiology and pharmacology, and Dr. J. C. Forbes, associate professor of biochemistry, attended the annual meeting of the Federation of American Societies for Experimental Biology in New Orleans, March 13-16.

Dr. E. H. Ingersoll, associate professor of anatomy, and Dr. Alton D. Brashear, assistant professor of anatomy, attended the annual meeting of the American Association of Anatomists in Louisville, Kentucky, March 20-22. Dr. Ingersoll gave a paper on *The Effect of Morphine on Nerve Cells.*

Dr. A. G. Dumez, dean of the school of pharmacy, University of Maryland, and president of the American Pharmaceutical Association, spoke to the pharmacy student body recently.

Dr. Patrick H. Drewry, Jr., assistant professor of neuropsychiatry, arrived here March 1 to take up his new duties. Dr. Drewry has been in London and Baltimore for a year under a fellowship from the Rockefeller Foundation.

The ex-internes of the hospital division will hold their annual reunion during the Stuart McGuire lecture period, April 16 and 17. The program for the lectures appears under the Department of Clinical and Medical Education in this issue of the JOURNAL.

A new textbook on *Physical Diagnosis,* published by the C. V. Mosby Company, is by Dr. Harry Walker, associate professor of medicine in the college.

News from University of Virginia, Department of Medicine.

Dr. Soma Weiss, Chief of the Medical Service at the Peter Bent Brigham Hospital in Boston and Hershey Professor of Medicine at Harvard University, gave the second Alpha Omega Alpha address for the session on February 19. His subject was The Medical Student Before and After Graduation.

At the meeting of the University of Virginia Medical Society on February 26, Dr. Julian M. Ruffin spoke on the subject, The Present Status of Gastroscopy.

On February 26, Dr. W. W. Waddell addressed the Norfolk Academy of Medicine and on February 27 he spoke before the Richmond Academy of Medicine. His subject was The Role of Vitamin K in the Etiology, Prevention and Treatment of Hemorrhage in the Newly Born.

On March 1, Dr. E. P. Lehman spoke before the Alexandria Medical Society on The Control of Intraperitoneal Adhesions with Heparin.

At the meeting of the Albemarle County Medical Society on March 7, Dr. Staige D. Blackford spoke on the subject, Serum and Chemotherapy of Pneumonia.

The New York Polyclinic Medical School and Hospital

Announces a special lecture by Dr. Russell L. Cecil, Professor of Internal Medicine, on April 10, at 2:30 P. M., on "Pneumonia—the Clinical Status of Classification and Types. Modern Methods of Diagnosis. Rabbit Serum Versus Horse Serum. Dis-

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cussion of Sulfapyridine and the Newer Sulfonamide Derivatives."

Announcement is also made that a special clinic for the Hard of Hearing has been established under the direction of Dr. Samuel J. Kopetzky. New patients are received on Tuesday and Thursday at 2:00 P. M.

News from Duke University School of Medicine.

On February 26, the Nu Sigma Nu Medical Fraternity held in the Duke Hospital amphitheatre an informal round table discussion on the "Problems of a Young Doctor in Private Practice". Participating in the panel were Dr. Wingate M. Johnson, of Winston-Salem, Editor of the *North Carolina Medical Journal* and former President of the State Medical Society; Professor Harold Meyer, Sociologist of the University of North Carolina; Professor Douglas B. Maggs, of the Duke University Law School; Professor Leroy Lewis, Instructor in Public Speaking at Duke University, and Dr. W. C. Davison, of the Medical School. Questions included in the discussion brought up matters of professional ethics, legal, social, and business aspects of medical practice.

On February 27, Dr. W. M. Firor, Acting Professor of Surgery, The Johns Hopkins University School of Medicine, held a clinic on "Burns".

On March 12, Dr. Mark V. Ziegler, Assistant Surgeon, U. S. Public Health Service, Washington, D. C., lectured on Opportunities in the United States Public Health Service.

On March 13, Dr. Halbert L. Dunn, Chief Vital Statistician, Census Bureau, Washington, D. C., lectured on Vital Statistics and Death Certificates.

On March 15, Dr. Arthur M. Shipley, Professor of Surgery, University of Maryland Medical School, Baltimore, held a clinic on "Traumatic Wounds of the Abdomen and Chest, and Suppurative Lesions of the Lung, Mediastinum and Pericardium".

A grant was made by The Rockefeller Foundation to Duke University for one year in support of the investigation of the physical chemistry of problems by Dr. Hans Neurath, Assistant Professor of Biochemistry.

A Field Nutrition Study has been established at Duke University in cooperation with The Rockefeller Foundation and the State Board of Health. Sera coming from a survey area in a rural section are tested in the nutrition laboratory at Duke, and careful medical and dietetic studies are to be carried on in the field. The plan is to assess the nutrition status of small representative communities by use of all the procedures at present available, and in the light of the results obtained to broaden the program to include larger areas in the state.

Dr. and Mrs. P. Harrison Picot

And young daughter, who have been located in Richmond, left the middle of March for Alexandria, where they will make their future home. They will be at 115 North Columbus Street, and Dr. Picot will be engaged in the practice of gynecology and obstetrics.

American Medical Association.

Official call has been issued for the ninety-first annual session of the Association in New York City, June 10 to 14, inclusive. The House of Delegates will convene on Monday, the 10th, but the scientific assembly will not open until Tuesday evening, the 11th, at 8:00 P. M. Owing to the fact that New York is convenient to doctors in this section and also that this will be another opportunity to visit the World's Fair, it is expected that many Virginia doctors will attend.

U. S. Pharmacopoeial Convention.

The Decennial meeting of the Convention for the Revision of the Pharmacopoeia of the United States of America will be held at Washington, beginning May 14. The Medical Society of Virginia is entitled to representation at this convention and Dr. Trout has appointed the following delegates: Dr. J. A. Waddell of the University of Virginia, Dr. Harvey B. Haag of the Medical College of Virginia, and Dr. Charles C. Haskell of Richmond. Alternates for these are Dr. J. Edwin Wood, Jr. of the University, Dr. Harry Walker of Richmond, and Dr. Harold W. Miller of Woodstock.

Dr. O. P. Campbell,

Formerly of Sparta, is now located at White Stone where he is engaged in general practice.

Children's Memorial Clinic.

Dr. Ramon D. Garcin was elected president of the board of directors of the Children's Memorial Clinic at its sixteenth annual meeting held recently and Dr. Harvie DeJ. Coghill was elected secretary.

Dr. T. H. Valentine

Of Lawrenceville has been appointed district deputy grand master of District 28, by the Grand Master of the Grand Lodge of Masons of Virginia, and will act as his personal representative for the current year.

Virginia State-Wide Safety Conference.

The Sixth annual conference of this organization will be in Roanoke, May 6, 7 and 8, at Hotel Roanoke. Much interest has been aroused by these conferences in the interest of safety at work, on the highways, in the homes, and while at play. The Medical Society has for several years been one of its cooperating organizations. In the report from our representatives last year, it was suggested that in the future our delegates be selected from the community in which the Conference is held. Following this suggestion, Dr. Trout, president, has this year appointed the following as representatives from the Medical Society of Virginia: Dr. W. R. Whitman, Dr. Roy M. Hoover, and Dr. John Cadden, all of Roanoke.

Col. William M. Myers, executive secretary of the Conference, requests us to advise that all members of the Society interested are invited to attend the sessions in Roanoke. Further information may be obtained from him at Allison Building, Richmond.

New Medical Director, Shenandoah Life Insurance Company.

Dr. David S. Garner, recently on the staff of the Medical College of Virginia Hospitals in Richmond, was elected medical director of the Shenandoah Life Insurance Company to succeed Dr. James H. Dunkley, retired, and entered upon his new duties, with headquarters in Roanoke, on March 1.

Attend American Academy of Pediatrics.

Dr. Thomas D. Jones and Dr. James B. Stone of Richmond were among those who attended the American Academy of Pediatrics at Edgewater Beach, Miss., the middle of March. Following the meeting, Dr. Jones went to New Orleans for a short vacation before returning home.

Officers of King's Daughters' Hospital.

The following doctors have been elected officers of the King's Daughters' Hospital of Staunton for the ensuing year: President, Dr. C. W. Putney; vice-president, Dr. B. H. Payne; and secretary, Dr. Leland C. Brown.

Dr. J. M. Gouldin,

Tappahannock, was recently elected president of the Tidewater Guernsey Breeders' Association for 1940.

Dr. Elam C. Toone, Jr.,

Richmond, formerly with the Medical Department of E. I. du Pont de Nemours, on April 1, will move his offices from the Medical Arts Building to 1015 West Franklin Street, his practice to be confined to internal medicine.

Army Experience for Physicians.

To augment the Medical Services necessitated by an increase in the strength and activity of the U. S. Army, with a corresponding increase in the responsibilities of its medical components, officers of the Medical Corps Reserve are being placed on duty throughout the medical organization of the Army. Also, physicians under thirty-five years of age, desirous of obtaining extended active duty with the Army, but not holding Reserve commissions, are being offered appointments in the Medical Corps Reserve in the grade of 1st Lieutenant in order to permit them to be placed on such duty. The average officer finds the pay and allowances attractive.

Application for one year of active duty, or for appointment in the Medical Corps Reserve with a view to obtaining one year of active duty with the Army, should be requested at once by a letter addressed to the Commanding General of the Corps Area wherein the physician permanently resides, that for Virginia, Maryland, Pennsylvania, and the District of Columbia being the Third Corps Area, Post Office and Court House, Baltimore, Md.

"Radium Number" of Mississippi Valley Medical Journal and Radiologic Review.

The March issue is the Thirteenth annual "Radium Number" of the *Mississippi Valley Medical Journal and Radiologic Review* (Quincy, Ill.) and contains ten original articles, especially written for this number, by well known radium therapists. There are two articles on uterine cervical cancer and oral malignancies by workers at the well known State Institute for the Study of Cancer at Buffalo, N. Y. Mershon of the Los Angeles Tumor Institute has an interesting article on carcinoma of the urethra; Ward and Covington of the University of Maryland School of Medicine discuss cancer of the colon and rectum with special emphasis on the

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present day status of radiotherapy. Levin of New York shows an interesting technic of radium therapy in carcinoma of the larynx. Murphy of Minneapolis discusses the use of radium in benign and precancerous lesions. Swanberg of Quincy shows the five year end-results of 1,431 radiologically treated patients suffering from uterine cervical cancer in sixteen radiotherapeutic centers as published by the League of Nations, which study reveals that the results from radiation therapy for cervical cancer, at the institute reporting the best results (Radium Institute of the University of Paris) were approximately 180 per cent better than obtained at the institution which has reported the best results from the surgical treatment (Wiebel Clinic of Vienna).

American Scientific Congress.

The eighth American Scientific Congress will be held in Washington, D. C., from May 10 to 18, under the auspices of the Government of the United States. On April 14, the Pan American Union will celebrate the fiftieth anniversary of its founding, and although the Congress will convene a few weeks subsequent to the anniversary, it will be one of the important phases of that celebration.

The Congress is to be divided into the following sections: Anthropological Sciences; Biological Sciences; Geological Sciences; Agriculture and Conservation; Public Health and Medicine; Physical and Chemical Sciences; Statistics; History and Geography; International Law, Public Law and Jurisprudence; Economics and Sociology; and Education.

Detailed information about the Congress may be secured from vice-chairman, Dr. Warren Kelchner, Acting Chief, Division of International Conferences, Department of State, Washington, D. C.

The Finnish Relief Fund, Inc.

Is sponsored by Mr. Herbert Hoover, and is approved by the Finnish Minister in Washington, D. C., His Excellency Hjalmar Procopé. It has the main purpose of accepting for the Finnish people and transmitting to Finland any funds contributed for this great cause by the American people. Contributions, unless otherwise specified, will be used for food and clothing for the Finnish civilian population, many of whom are suddenly made homeless by having their houses irreparably demolished by the incendiary bombs from Russian aeroplanes.

No money is deducted for expenses from any contribution made through this Fund, and every dollar donated arrives in Finland worth one hundred cents. No salaries are paid and no financial remunerations are made to officers on duty with the Finnish Relief Fund. Expert auditors make a daily checkup of the donations acquired and chart the results.

The National Chairman of the Medical Division of the Professional Groups of the Finnish Relief Fund, Inc., is Dr. John Frederick Erdmann of New York. The Executive Director of the Medical Division is Dr. Kerwin W. Kinard who has offices at Fund Headquarters.

All checks should be made payable to the Finnish Relief Fund, Inc., and sent to the Medical Division of the Finnish Relief Fund, Inc., 420 Lexington Avenue, New York, N. Y.

For Sale—

Westinghouse X-ray machine. First class condition. Reasonable. For full particulars write No. 175, care the MONTHLY. (*Adv.*)

Resident Physicians Wanted.

Opening for three mixed residencies, July 1. Excellent service. Good salary. Opportunity for one to be chief resident. Address: Superintendent, Roanoke Hospital, Roanoke, Virginia. (*Adv.*)

Assistant Wanted.

For practice in West Virginia coal fields. Attractive position for a young man who wishes to do this kind of work either temporarily or permanently. Give full particulars in first letter, and address "Coal Fields", care this JOURNAL. (*Adv.*)

Physician Wanted.

In Rockingham County. Good location for single man between 25 and 45 years of age. Information in regard to this location may be obtained from Miss Sarah E. Halterman, R.N., Bergton, Va. (*Adv.*)

Medical Secretarial Position Wanted

By graduate of St. Claire's Secretarial School. Experienced in medical work. Address "Medical Secretary", care VIRGINIA MEDICAL MONTHLY, Richmond. (*Adv.*)